

JVC

SERVICE MANUAL

VHS VIDEO MOVIE SYSTEMS 



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VHS VIDEO MOVIE

MODEL **GR-C7EG/EK**

CAR BATTERY CHARGER

MODEL **BH-V5E**

CARRYING CASE

MODEL **CB-V50U**

SHOULDER STRAP

MODEL **VU-V17U**

CARRYING BAG

MODEL **CB-V21U**

NOTE: For a technical description, please refer to Technical Guide T-8057 GR-C7 PAL.

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— OPTION —

BH-V5E

CB-V50U

VU-V17U

CB-V21U

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GR-C7EG/EK

HQ
High Quality



SPECIFICATIONS

Format : VHS standard
Power source : DC 9.6 V \equiv
Power consumption : 8.0 watts
Signal system : PAL
Recording system : Luminance: FM recording
Colour: Converted sub-carrier
direct recording
Conforms to VHS standard

Cassette : VHS-C cassette
Tape speed (SP) : 23.39 mm/sec
(LP) : 11.70 mm/sec

Recording time
Max. (SP) : 30 minutes (with EC-30
cassette)
(LP) : 60 minutes (with EC-30
cassette)

VIDEO
Output : 1 Vp-p, 75 ohms, unbalanced
(via AV OUT connector)
S/N ratio : 40 dB (with Rohde & Schwarz
noise meter)

AUDIO
Output : -6 dBs, 1 k-ohm (via AV OUT
connector)
Microphone input : -68 dBs, high impedance,
unbalanced

Pickup : 1/2"-format CCD
Minimum required
illumination : 15 lux (at F 1.6)
Illumination range : 15 - 100,000 lux
Lens : F 1.6, f = 9 - 54 mm,
6:1 power zoom lens with auto
iris control and macro position,
filter diameter 49 mm
Viewfinder : Electronic viewfinder with
0.6" black/white CRT
Colour temperature : Switchable
switching (3,200 K/5,500 K)
White balance : Full-auto/preset standard
adjustment
Operating temperature : 0°C to +40°C
Operating humidity : Less than 80 %
Storage temperature : -20°C to +50°C
Weight : 1.4 kg (with viewfinder)
Dimensions : 121(W) x 165(H) x 223(D) mm
(incl. viewfinder)

AA-V2EG/EK SPECIFICATIONS

Power supply : AC 110 – 240 V~, 50/60 Hz
 Power consumption : 30 watts
 Rated output voltage: DC 9.6 V \equiv
 Rated output current: 1.2 A
 Charging system : Constant current, peak detection, timer controlled
 Dimensions : 57(W) x 67(H) x 200(D) mm
 Weight : Approx. 700 g

C-P3U SPECIFICATIONS

Type : VHS cassette adapter
 Dimensions : 188(W) x 25(H) x 104(D) mm
 Weight : 235 g
 Accessory : "R6"-size battery x 1

RF-P1E SPECIFICATIONS

Output channel : UHF channels 32 – 40 (adjustable)
 Initial channel setting : UHF 36
 Power source : DC 8 V \equiv 20 mA (from VideoMovie)
 Dimensions : 55(W) x 93(H) x 24(D) mm excl. cable
 Cable length : 2.5 m
 Weight : Approx. 160 g

Provided accessories

High-capacity battery pack (1.0 AH) NB-P7U
 AC power adapter/battery charger AA-V2EG/EK
 RF unit RF-P1E
 Aerial cable
 Dubbing cable x 2
 Compact video cassette EC-30
 Cassette adapter C-P3U
 Electronic viewfinder VF-V7E
 Shoe adapter
 Lens hood
 Lens cap
 Shoulder strap VU-V17U
 Carrying case CB-V50U
 Grip pad

Optional accessories


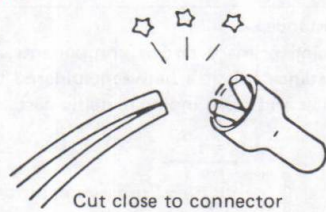
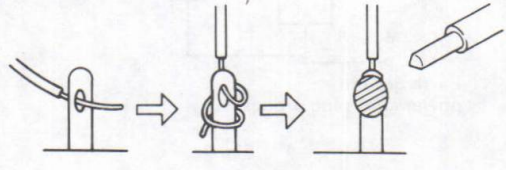
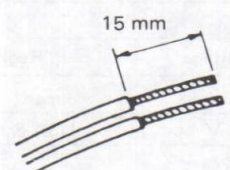
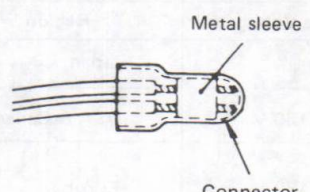
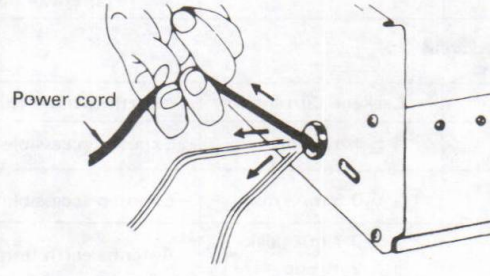
Regular battery pack (0.5 AH) NB-P5U
 Medium-capacity battery pack (0.7 AH) NB-P6U
 High-capacity battery pack (1.0 AH) NB-P7U
 Super high-capacity battery pack (1.8 AH) NB-P8U
 AC power adapter/battery charger AA-V2EG/EK
 Car battery charger BH-V5E
 Car battery cord AP-P1E
 Cassette adapter C-P3U
 Compact video cassette EC-30
 Carrying bag CB-V21U
 Shoulder strap VU-V17U
 Carrying case CB-V50U
 Remote control unit RM-P1U
 A/V extension cable VC-P2U
 Conversion cable VC-V810U
 Character generator CG-P50E

Design and specifications subject to change without notice.

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

<p>1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.</p>	<p>10. Products using cathode ray tubes (CRTs)</p> <p>In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.</p>
<p>2. Parts identified by the  symbol and shaded (■) parts are critical for safety.</p> <p>Replace only with specified part numbers.</p> <p>Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.</p>	<p>11. Crimp type wire connector</p> <p>In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.</p>
<p>3. Use specified internal wiring. Note especially:</p> <ol style="list-style-type: none"> 1) Wires covered with PVC tubing 2) Double insulated wires 3) High voltage leads 	<p>1) Connector part number : E03830-001</p> <p>2) Required tool : Connector crimping tool of the proper type which will not damage insulated parts.</p> <p>3) Replacement procedure</p> <p>(1) Remove the old connector by cutting the wires at a point close to the connector.</p> <p>Important : Do not reuse a connector (discard it).</p>
<p>4. Use specified insulating materials for hazardous live parts. Note especially:</p> <ol style="list-style-type: none"> 1) Insulation Tape 2) PVC tubing 3) Spacers 4) Insulation sheets for transistors 	<p>Free service manuals Gratis schema's Digitized by www.freesevicemanuals.info</p>  <p>Fig. 3</p>
<p>5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.</p>  <p>Fig. 1</p>	<p>(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.</p>  <p>Fig. 4</p>
<p>6. Observe that wires do not contact heat producing parts (heat-sinks, oxide metal film resistors, fusible resistors, etc.)</p>	<p>(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.</p>  <p>Fig. 5</p>
<p>7. Check that replaced wires do not contact sharp edged or pointed parts.</p>	<p>12. Also check areas surrounding repaired locations.</p>
<p>8. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.</p>  <p>Fig. 2</p>	

- (4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

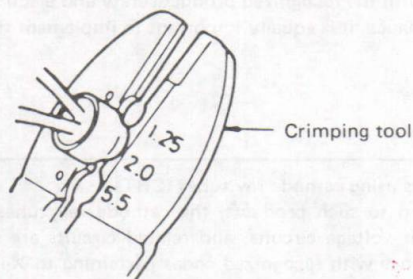


Fig. 6

- (5) Check the four points noted in Fig. 7.

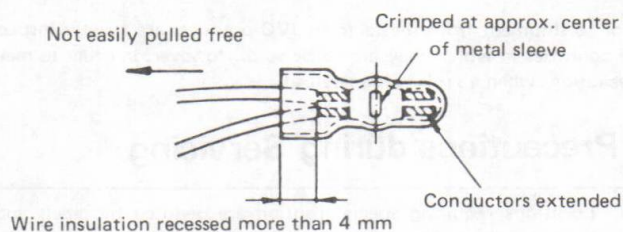


Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. Insulation resistance test

Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

2. Dielectric strength test

Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table below.

3. Clearance distance

When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table below.

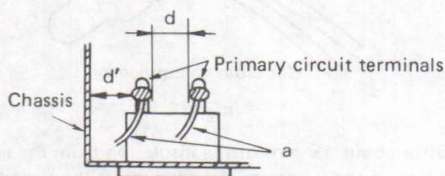


Fig. 8

4. Leakage current test

Confirm specified or lower leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).

Measuring Method: (Power ON)

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure and following table.

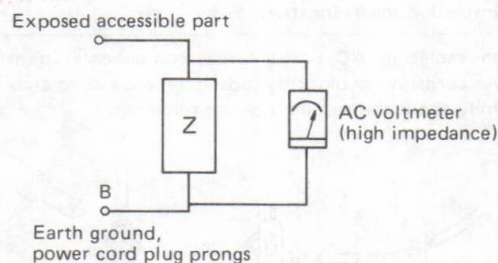


Fig. 9

AC Line Voltage	Region	Insulation Resistance	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	$\geq 1 \text{ M}\Omega/500 \text{ V DC}$	1 kV 1 minute	$\geq 3 \text{ mm}$
110 to 130 V	USA & Canada	—	900 V 1 minute	$\geq 3.2 \text{ mm}$
*110 to 130 V 200 to 240 V	Europe Australia	$\geq 10 \text{ M}\Omega/500 \text{ V DC}$	4 kV 1 minute	$\geq 6 \text{ mm (d)}$ $\geq 8 \text{ mm (d')}$ (a: Power cord)

*Class II model only.

Table 1 Ratings for selected areas

AC Line Voltage	Region	Load Z	Leakage Current (i)	Earth Ground (b) to:
100 V	Japan		$i \leq 1 \text{ mA rms}$	Exposed accessible parts
110 to 130 V	USA & Canada		$i \leq 0.5 \text{ mA rms}$	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe Australia		$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Antenna earth terminals
			$i \leq 0.7 \text{ mA peak}$ $i \leq 2 \text{ mA dc}$	Other terminals

Table 2 Leakage current ratings for selected areas

Note: This table is unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

WARNING:
TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

This equipment should be used with 9.6 V --- only.

CAUTION:
 To prevent electric shocks and fire hazards, do NOT use any other power source.

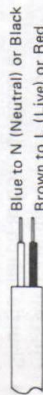
The AA-V2EG AC Power Adapter/Battery Charger should be used with 110 - 240 V~, 50/60 Hz only.

Caution:
 To prevent electric shocks and fire hazards, do NOT use any other power source.

IMPORTANT (In the United Kingdom)
 Mains Supply (240 V~, 50 Hz only)

IMPORTANT

Do not make any connection to the Larger Terminal coded E or Green. The wires in the mains lead are coloured in accordance with following code:



If these colours do not correspond with the terminal identifications of your plug, connect as follows:

Blue wire to terminal coded N (Neutral) or coloured Black.
 Brown wire to terminal coded L (Live) or coloured Red.

If in doubt - consult a competent electrician.

Note

We recommend that you should disconnect the AC cord from the outlet.

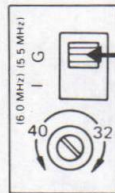


• VideoMovie is designed exclusively for the VHS video cassette. Only cassettes marked VHS can be used with this unit.

• HQ VHS is compatible with existing VHS equipment.

Thank you for purchasing the JVC GR-C7E Auto-focus VideoMovie. Weighing only 1.4 kg, the Auto-focus VideoMovie comprises an auto-focus CCD video camera, and recording and playback functions in a single compact unit for the most convenient live recording capability available today. The Auto-focus VideoMovie uses the VHS recording system and compact video cassettes to make recordings compatible with all VHS recorders. It can also be connected to your television set for direct playback of cassettes; no additional video equipment is required.

To take best advantage and gain the most service from your Auto-focus VideoMovie, read this instruction booklet carefully and thoroughly.



ATTENTION:

The system select switch on the rear of the provided RF unit RF-P1E has been set to G (Continental PAL, 5.5 MHz).

CAUTION:

To prevent shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified personnel.

NOTES:

- The rating plate (serial number plate) and safety caution of the main unit are on its bottom.
- The rating plate (serial number plate) of the viewfinder is on its bottom.
- The rating plate (serial number plate) of the AC power adapter/battery charger is on its side.

The provided viewfinder is the VF-V7E. Do not use any other viewfinder with the GR-C7E.

This equipment has been produced to comply with Directive number 82/499/EEC.

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- Allows direct recording and playback with no additional components necessary.
- Ultra-compact and ultra-lightweight: a mere 1.4 kg.
- Maximum of 60 minutes recording time in LP mode.
- HQ (High Quality) System for super picture quality.
- Super-performance camera using a CCD (Charge Coupled Device) pickup highly resistant to shock and vibrations less susceptible to burn for semi-permanent, trouble-free operation.
- Full-auto camera operation (image-sensing auto-focus, auto-tracking white balance, auto iris with BLC).
- Ultra-compact adjustable electronic viewfinder (monochrome CRT, 0.6-inch screen) with diopter control, also for instant on-the-spot playback.
- High-sensitivity/low-lag design: allows shooting in light as low as 15 lux.
- High-performance 6:1 power zoom lens with macro position.
- Three-way power supply flexibility: battery pack, AC power adapter and car battery.
- Selectable quick review function.
- One-button recording standby mechanism.
- Improved assemble-edit accuracy.
- Shuttle search in both directions.
- Ergonomic design with palm grip and finger rest for trigger control.
- Complete package in a durable case.

The GR-C7E is designed to be used with PAL-type colour television signals. It cannot be used for playback with a television of a different standard. However, live recording and viewfinder playback are possible anywhere. Use the NB-P5U/NB-P6U/NB-P7U/NB-P8U battery packs and, to recharge them, the provided multi-voltage AC power adapter/battery charger. (An appropriate conversion adapter may be necessary to accommodate different designs of AC outlets in different countries.)

PRECAUTIONS

- For safety, strictly observe the following instructions.
- Do not open the cabinet.
 - Prevent inflammables, water and metallic objects from entering the unit.
 - Do not disassemble or modify the unit.
 - Do not use the unit when there is lightning in the vicinity. Disconnect the power cable of connected equipment.
 - Avoid using the unit under the following conditions:
 - Places subject to excessive humidity or dust.
 - Near appliances generating strong magnetic or electric fields (speakers, broadcasting antennas, etc.).
 - Places subject to soot or steam such as near a cooking stove.
 - Places subject to excessive shock or vibration.
 - Near a television set (rolling pictures or howling might result).
 - Extremely hot places.
 - Do not expose the unit to high temperatures over 50°C for long periods.
 - If the unit should be subjected to direct sunlight, or left in a closed car in summer, or placed near a heater, the CCD and the auto-focus sensor may deteriorate and the cabinet may become deformed. Furthermore, this also may cause the transistors and other electronic and mechanical parts to malfunction. Remember the following:
 - Do not use the unit in places of over 40°C.
 - Do not use the unit in places of below 0°C.
 - Do not use the unit in humid places of over 80%.
 - For long storage, select a place between -20°C and 30°C.
 - Take special care for protection of the unit.
 - Do not allow the unit to become wet.
 - Do not leave the unit in closed cars on hot summer days.
 - Take special care not to drop the unit or strike it against hard objects. Protect from shocks during transportation.

- Make it a rule to observe the following instructions.
- Do not remove the battery pack or disconnect other power supply units during recording or playback before pressing the POWER switch to OFF. If not observed, this will cause tape damage.
 - When the unit is not in use, remove the battery pack. Keep the lens and viewfinder eyepiece always clean.
 - When the lens is dirty or dusty, blow it off first and then gently wipe with a soft brush or lens cleaning paper.
 - The lens is likely to become moldy if left dirty. Be careful not to damage the CCD and auto-focus sensor.
 - Do not keep the lens directed at extremely bright objects such as the sun or other light sources for long periods. Although the CCD is less susceptible to such burn than a tube would be, caution should be exercised when using this unit. Most importantly, the lens should be capped except while actually shooting.
 - Do not direct the eyepiece of the viewfinder at the sun.
 - Auto-focus requires a bit of consideration.
 - Do not touch the focus ring while the auto-focus mechanism is in operation as this could damage the auto-focus mechanism.
 - When a filter or a special-effect lens is to be attached to the end of the lens, be sure to turn power off or switch from the Auto-focus mode to the Manual mode. NEVER attempt to attach a filter or lens while the auto-focus mechanism is operating as this will result in malfunctioning. (If a teleconversion or wide-angle conversion lens is attached, the auto-focus mode cannot be used.)
 - Handle the unit carefully.
 - Protect the microphone from excessive shocks.
 - Do not carry the unit by holding it only by the viewfinder.

VIDEO CASSETTES

Moisture condensation disables use of the unit.

- You have observed that pouring a cold liquid into a glass will cause drops of water to form on the glass's outer surface. This same phenomenon occurs on the head drum of a video recorder when the recorder is moved from a warm place to a cool place, after heating a cold room, under extremely humid conditions or in a place directly subjected to the cool air from an air conditioner.

- Moisture on the head drum can cause severe damage to the video tape, and can lead to internal damage to the recorder itself.

- If moisture condensation occurs on the head drum, a condensation warning appears in the counter display and the unit enters the Stop mode, unable to function. In such a case, wait for a few hours until the indicator disappears.

Maintenance

- When the cabinet is dusty, clean by gently wiping with a soft cloth.
- Avoid the use of strong cleaning agents such as benzine or alcohol as they may damage the cabinet.
- Cleaning should be done only after the battery pack has been removed or other power units have been disconnected.

Serious malfunctioning

If malfunctioning occurs, stop using the unit immediately and consult your local JVC dealer.

- The GR-C7E employs only compact video cassettes carrying the **VHS** mark.

- Recording onto prerecorded tapes automatically erases the previously recorded video and audio signals.

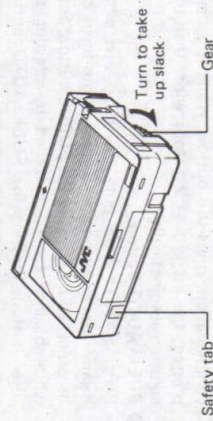
- An inverted cassette cannot be inserted.

- Do not load and unload the cassette repeatedly without allowing the tape to run at all. This will slacken the tape and thereby damage it.

- Make certain before loading the cassette that the gear on the cassette in the direction of the arrow to take up slack.

- The cassette is equipped with a safety tab to prevent accidental erasure. When the tab is removed, recording is impossible. If you wish to record on a cassette whose tab has been removed, use adhesive tape to reseal the slot.

- To avoid excessive exposure to dust and fingerprints, do not open the front tape cover.

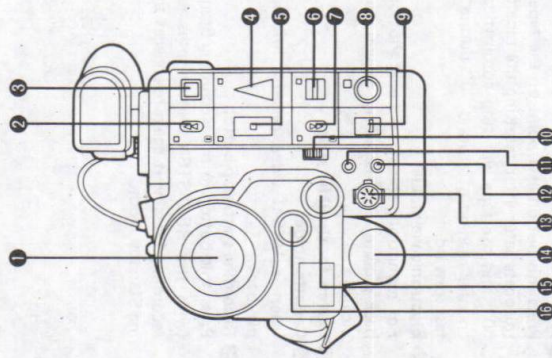


Storage of cassettes

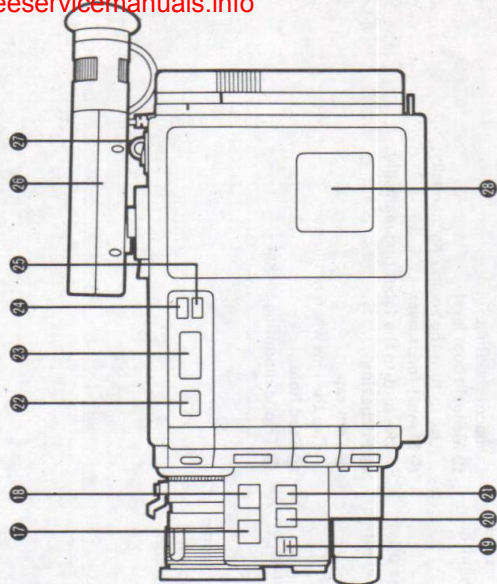
- Avoid exposing the cassettes to direct sunlight. Keep them away from heaters.
- Avoid storing the cassettes in humid or dusty places.
- Do not drop the cassettes. Do not expose them to violent vibrations or shocks.
- Do not expose the cassettes to strong magnetic fields (near a motor, transformer or magnet).
- Place the cassettes in cassette cases and position them vertically.

CONTROLS AND CONNECTORS

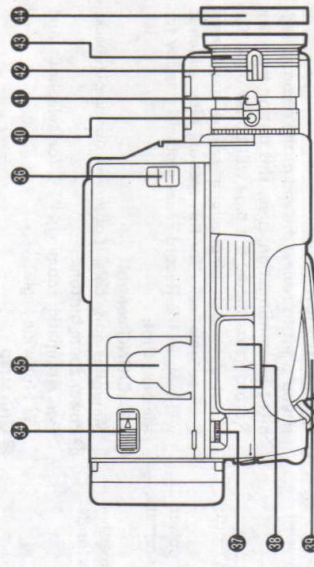
Front view



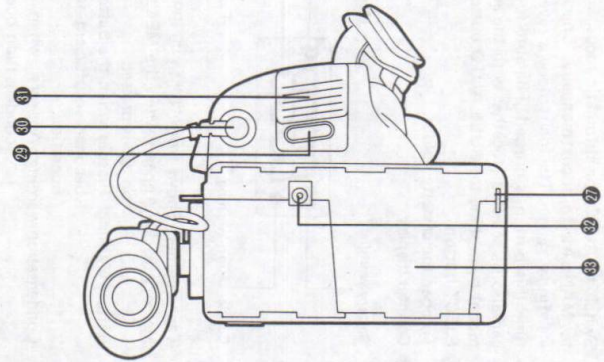
Left side



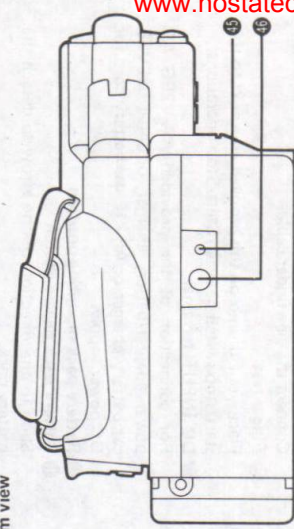
Top view

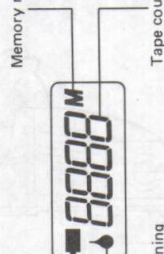


Rear view



Bottom view

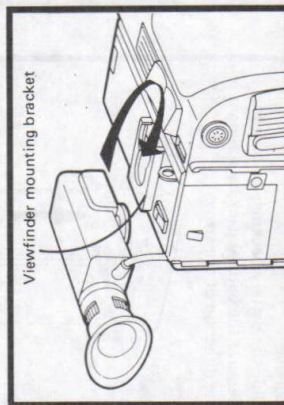


- ① 6:1 zoom lens**
F 1.6, f = 9 – 54 mm. Filter diameter: 49 mm.
- ② FF/SHUTTLE SEARCH button with LED indicator**
Pressing this button in the Stop mode fast forwards the tape; pressing it in the Play mode allows fast playback (three times normal speed in SP mode, seven times normal speed in LP mode).
- ③ MONITOR button**
Push this button when you wish to rehearse shots before actually recording them. This function allows you to view the scene on the viewfinder without recording it. Push the STOP button to release this function.
- ④ PLAY button with LED indicator**
Press to start playback.
- ⑤ STOP button with LED indicator**
Press to engage the Stop mode.
- ⑥ PAUSE/STILL button with LED indicator**
Press to view a still picture during playback.
- ⑦ REW/SHUTTLE SEARCH button with LED indicator**
Pressing this button in the Stop mode rewinds the tape; pressing it in the Play mode allows fast playback in reverse (three times normal speed in SP mode, seven times normal speed in LP mode).
- ⑧ REC STBY button with LED indicator**
Press to engage the Recording Standby mode in which both the REC STBY and PAUSE/STILL LED indicators light. To start recording, press the recording start/stop button ②. While recording, the REC STBY LED indicator is blinking.
- ⑨ POWER switch**
Press to turn power on. The STOP LED indicator will light. Press again to switch off power.
- ⑩ SP/LP recording mode select switch**
Set to SP to record at standard tape speed. Set to LP to record at a slower tape speed, allowing an extended recording time of up to one hour with a single cassette.
- ⑪ Earphone jack (PHONE)**
⑫ REMOTE control jack
For connection of the optional RM-P1U pause remote control unit.
- ⑬ AV OUT connector**
Both audio and video signals are available from this connector.
To dub from this unit, connect the A/V input connectors of a second recorder to this connector, using the provided dubbing cable.
For playback with a TV, connect the RF-P1E RF unit (provided) to this connector and to the TV.
- ⑭ Exclusive microphone**
Omnidirectional condenser microphone for simultaneous sound recording. It can be replaced with other microphones.
- ⑮ White balance sensor window**
Allows light to enter for white balance adjustment.
- ⑯ Auto-focus sensor window**
Allows light to enter for measuring the camera-to-subject distance.
- ⑰ FADER button**
Press this button once to fade out the picture to a white blank screen. For fading in, first press it twice to engage the fade-in standby mode and, after starting recording, press the button where fade-in is to begin.
- ⑱ BLC button**
Iris control is always automatic. For backlight compensation, press this button. While it is being pressed, the iris is 1 – 2 f-stops wider than that adjusted automatically.
- ⑲ FULL AUTO button**
Pressing this button puts the focus and white balance under automatic control. Auto-focus can be cancelled by pressing the FOCUS button; auto-white balance can be cancelled by pressing the filter button. Pressing the FULL AUTO button in the full-auto mode has no effect.
- ⑳ Filter select button**
Select the filter position depending on the source of light if the auto-white mode is not used.
☀ : under a halogen or tungsten lamp.
☀☀ : under daylight.
The filter position is changed each time this button is pressed. Check on the viewfinder screen.
- ㉑ FOCUS select button**
Switch to AUTO for automatic focus, and switch to MANUAL to focus manually. Check on the viewfinder screen. The focus mode is reversed each time this button is pressed. The auto-focus mode can also be selected (together with the auto-white mode) by pushing the FULL AUTO button.
To open the cassette holder.
- ㉒ Counter display**
Battery warning
Memory mark
Tape counter
Condensation warning
- 
- ㉓ FOCUS select button**
Switch to AUTO for automatic focus, and switch to MANUAL to focus manually. Check on the viewfinder screen. The focus mode is reversed each time this button is pressed. The auto-focus mode can also be selected (together with the auto-white mode) by pushing the FULL AUTO button.
To open the cassette holder.
- ㉔ EJECT button**
To open the cassette holder.
- ㉕ Counter display**
Battery warning
Memory mark
Tape counter
Condensation warning
- ㉖ RESET button**
Press to reset the counter to "0".
- ㉗ MEMORY button**
Press this button at a point on the tape you want to locate later after resetting the tape counter to "0", and the tape will stop automatically at the counter reading of around "0" during rewind or fast forward.
- ㉘ Electronic viewfinder**
For monitoring the scene being shot or the playback picture after recording. Several indicators are included.
- ㉙ Eyelets for shoulder strap**
㉚ Cassette holder
Insert a VHS-C video cassette for recording or playback.
- ㉛ Recording start/stop button**
Press this button in the Recording Standby mode (with the REC STBY button pressed) to start recording. Pressing it again re-engages the Recording Standby mode.
- ㉜ Viewfinder cable connector (VF)**
Connect the viewfinder cable.
- ㉝ Finger rest**
Place your thumb on this grooved area next to the start/stop switch between Start/Stop operations.
- ㉞ DC INPUT terminal**
For connection of the provided AA-V2EG AC power adapter/battery charger, optional BH-V5E car battery charger or AP-P1E car battery cord for DC power supply.
- ㉟ Battery pack mounting position**
㊱ Battery pack release button
Slide in the direction of the arrow to detach the battery pack.
- ㊲ Viewfinder mount**
Attach the provided viewfinder.
- ㊳ QUICK REVIEW button**
If you want to review the end of the recorded segment for confirmation, press this button from the Record-Pause mode; the tape will be rewound for about 2 seconds of programme time and played back automatically for this section, after which it will stop in the Record-Pause mode in standby for the next shot.
- ㊴ TRACKING control**
Minimises noise bars, if observed, during playback.
- ㊵ Power zoom buttons**
For automatic zooming: "T" for telephoto and "W" for wide-angle.
- ㊶ Grip strap**
Secures the operator's hand to the hand grip.
- ㊷ Macro button**
Turn the zoom ring while pressing this button for macro shooting.
- ㊸ Manual zoom lever**
Use to turn the zoom ring manually.
- ㊹ Manual focus lever**
Use to turn the focus ring manually.
- ㊺ Focus ring**
㊻ Lens cap
Cap the lens when not in use.
- ㊼ Stud hole**
㊽ Tripod mounting socket

Mounting the Viewfinder

Switch off power before mounting or removing viewfinder.

Mounting the viewfinder

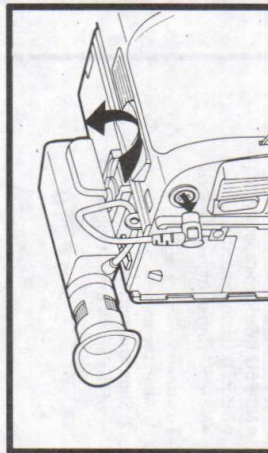


Align the viewfinder's coupling fixture along side the mounting bracket on the body and slide the fixture into the bracket while pressing down.



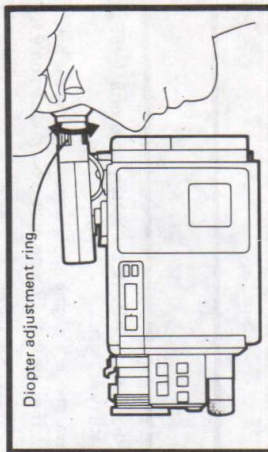
Connect the viewfinder cable to the viewfinder cable connector (VF).

Removing the viewfinder



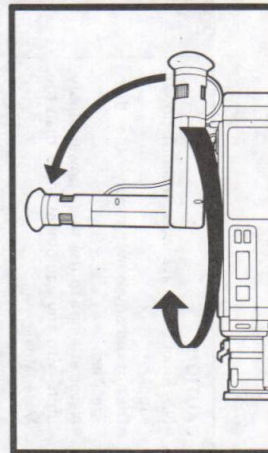
Pull out the viewfinder cable and slide the viewfinder out of the bracket while applying downward pressure.

Dioptr adjustment



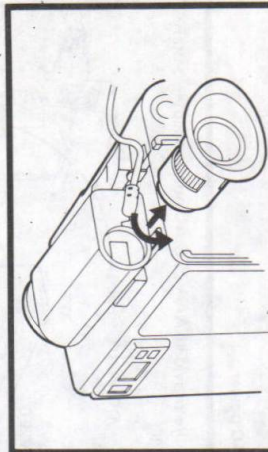
The viewfinder lens can be adjusted to suit the operator's eyesight by rotating the diopter adjustment ring.

Positioning the viewfinder

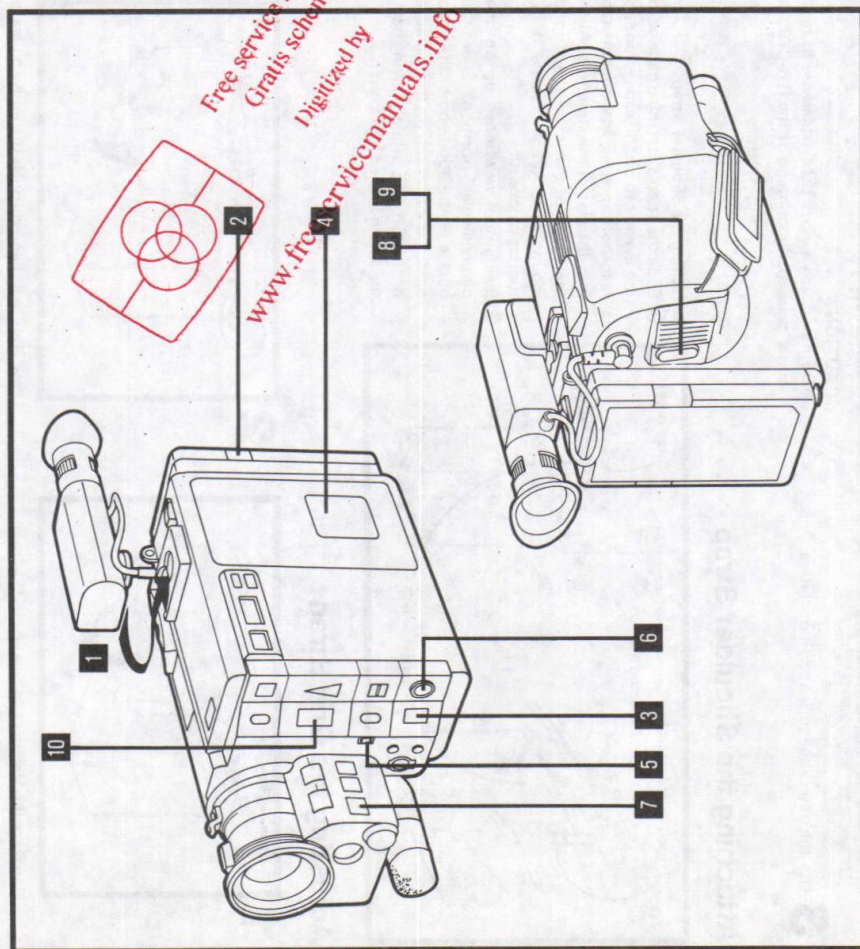


The viewfinder can be positioned for best viewability. It can be rotated 360° and tilted up 90°, making almost any viewing angle possible.

Cleaning the viewfinder



The viewfinder eyepiece can be removed for cleaning. Turn the eyepiece counterclockwise and pull it out.



Full-auto outdoor recording procedure

- 1 Mount the viewfinder.
(Refer to page 10 for details.)
- 2 Attach the battery pack.
(Refer to page 12 for details.)
- 3 Press POWER switch.
- 4 Pop in a cassette.
(Refer to page 13 for details.)
- 5 Set tape speed to SP or LP.
- 6 Press REC STBY button.
- 7 Press FULL AUTO button.
- 8 Shoot (push start/stop button).
- 9 Stop recording (push start/stop button).
- 10 To end recording, press STOP button.
• To play back the recorded tape, press REW button and then PLAY.

POWER SUPPLY SYSTEM

The convenient 3-way power supply system gives you a choice of the most appropriate power supply unit, depending on the application.

With AC power

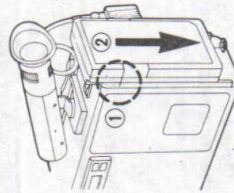
- CAUTION**
- No function is available without power supply.
 - Do not use any power supply other than specified.
 - Never attempt to use these power supply units with any equipment other than the VideoMovie.

Where AC power is not available

- Use the battery packs:
- NB-P5U (Regular)
 - NB-P6U (Medium-capacity)
 - NB-P7U (High-capacity)
 - NB-P8U (Super high-capacity)

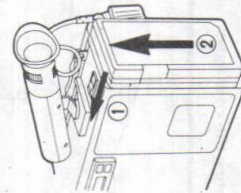
To attach

- 1 Align the marks.
- 2 Slide the battery pack in the direction of the arrow until it locks.

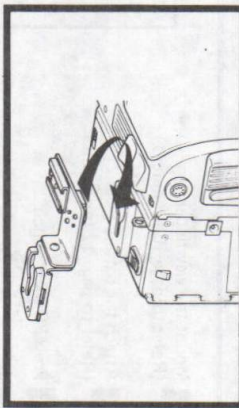


To remove

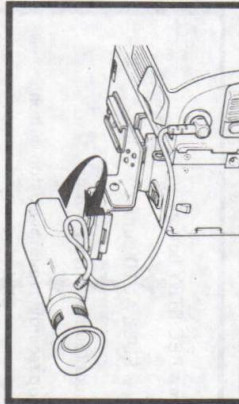
- 1 Slide the battery pack release button.
- 2 Remove the battery pack by sliding it in the direction of the arrow.



- Remove the battery pack when not in use.
- For charging the battery packs refer to page 29.



2



To attach the shoe adapter, remove the viewfinder and slide the adapter into the bracket usually used for the viewfinder.

To position the viewfinder for left-eye viewing, slide it into the shoe that is farthest from the camera body.

CAUTION

- Do not attach a video light, otherwise its heat could cause malfunctioning of the GR-C7E.

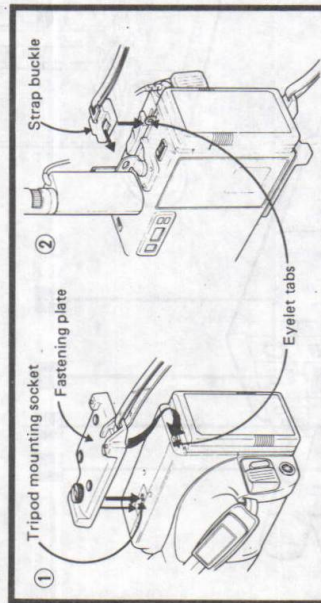
3

Use the other shoe for an additional item.

Attaching the Shoe Adapter

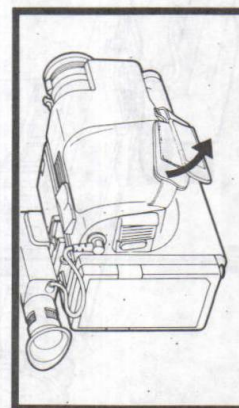
Use this adapter to re-position the viewfinder for left-eye viewing, or for additionally attaching the character generator or an external mike.

Attaching the Shoulder Strap



- Attaching the Shoulder Strap**
- 1 Slide the strap's fastening plate onto the eyelet tab on the camera body's rear, bottom edge, inserting the tab into the slot in the strap ring. Align the large screw over the tripod mounting socket and screw it in, turning clockwise.
 - 2 Swing the viewfinder up to the perpendicular position. Slide the buckle at the other end of the strap onto the eyelet tab on the top edge of the GR-C7E while drawing back the spring-loaded locking pin.

Adjusting the Grip Strap



2

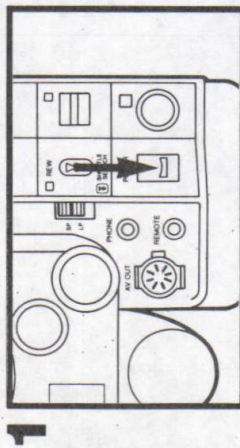


Separate the Velcro strip to expand the loop.

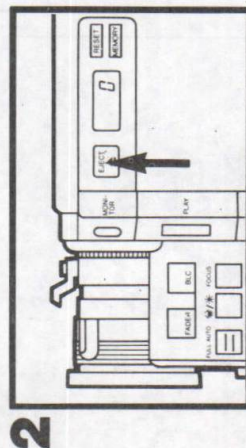
Pass your right hand through the loop and grasp the lens grip. Adjust the length of the strap to suit your hand size and refasten the Velcro strip.

LOADING AND UNLOADING A VIDEO CASSETTE

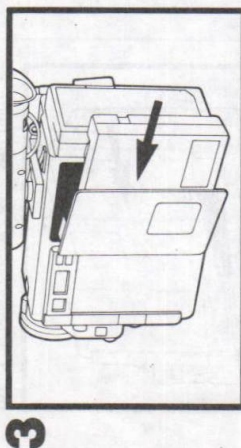
LOADING



Press the POWER switch to turn power on.

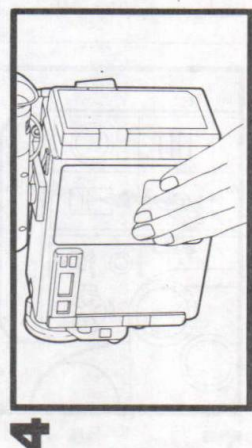


Open the cassette holder by pressing the EJECT button.



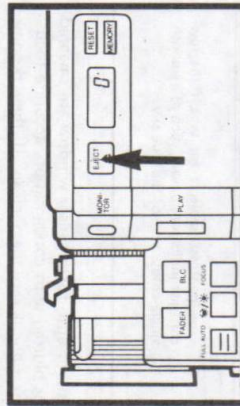
Insert the cassette with its printed arrow facing outward.

First remove tape slack, then insert the cassette correctly. See page 5.

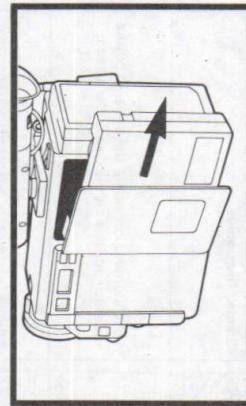


Close the cassette holder by pushing its centre area.

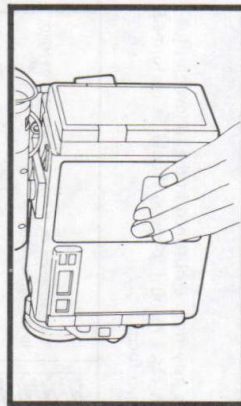
UNLOADING



Make sure the unit is in the Stop mode. Press the EJECT button. The cassette holder will open.



Remove the cassette.



Close the cassette holder by pushing its center area.

• When not in use, switch off power.

Notes:

- Do not repeat loading and unloading of the cassette without running the tape, as this will slacken the tape, causing tape damage.
- When the battery is discharged, the tape is unloaded and the power turns off. However, pressing the POWER switch while holding the EJECT button pressed, turns the power on and ejects the cassette.

VIEWFINDER INDICATIONS

The viewfinder of the GR-C7E provides comprehensive on-screen indications. During recording or rehearsal, you can refer to adjustment aids or warnings.

Recorder status indications

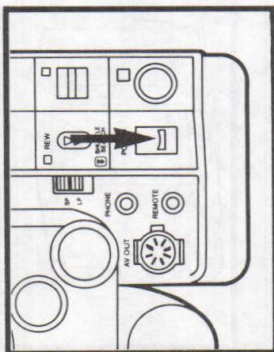
Recording standby mode		Small bar in upper right corner of the screen shows unit in the pause mode or the rehearsal mode (with or without cassette).
Recording mode		When the start/stop switch is pressed from the pause mode, REC or LP REC indicates that tape is running properly.

Camera status indications

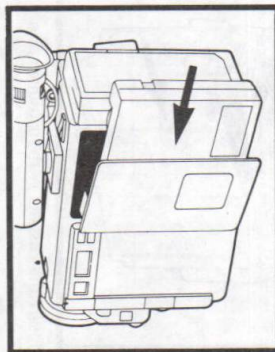
Filter switch setting (Manual mode)		Indicates that outdoor filter is in use.
		Indicates that indoor filter position is in use.
Manual focus		<ul style="list-style-type: none">▶ : turn focus ring clockwise until appears.◻ : indicates aimed-at subject is in focus.◄ : turn focus ring counterclockwise until appears.• Auto-focus mode is indicated by none of these appearing on the screen.

Warnings

Tape-end warning		When time for remaining tape reaches a few minutes, "REC" begins blinking.
Battery warning		When battery power becomes insufficient for normal operation, "BATTERY" appears and blinks.
Low-light warning		When amount of light is insufficient, "LIGHT" appears and blinks.
Low-contrast warning		If focus detection is difficult because of low contrast, these focus-aid indicators appear simultaneously and blink.



Press the POWER switch to ON.



Insert a video cassette correctly (with its safety tab in place).

Precautions for auto-focus

Focus detection zone



- A small area around the centre of the picture, which varies depending on the zoom and focus conditions, is used to detect focus. (No actual indication provided on the screen.)

CAUTION

- Do not touch the focus ring while the auto-focus mechanism is in operation.
- When not in use, do not leave the GR-C7E in the Auto-focus mode with power on; otherwise light entering the auto-focus sensor window will operate the auto-focus mechanism, consuming power.

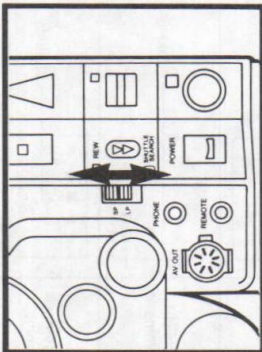
Correct focus may not be obtained in the following situations. In such cases manual focusing should be performed to obtain proper focus.

	Two subjects at different distances overlap in the same scene.
	Slanted lines only.
	Low illumination where the under-exposure indicator appears on the viewfinder screen.
	Minute patterns or identical patterns that are regularly repeated.
	Low contrast subjects for which the low-contrast indicator appears, such as a smooth, single-colour wall or the blue sky.

Note:

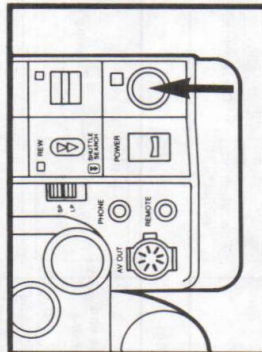
- If the lens and/or auto-focus sensor window are smeared with stains or blurred with condensation, accurate focusing is not possible. Keep them clean. If they become dirty, wipe with a piece of soft cloth. When condensation occurs, dry them by wiping with a soft cloth or wait for conditions in which they become dry.

3



Set the tape speed to SP or LP.

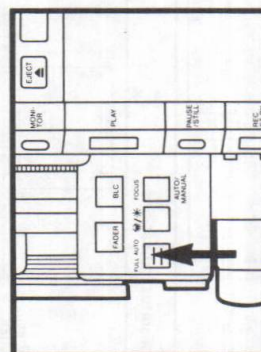
4



Press the REC STBY button. The unit enters the Recording Standby mode (with the REC STBY and PAUSE LED indicators lighting).

Check the viewfinder indicator indications. See page 14.

5



For full-auto operation, press the FULL AUTO button.

For manual override, use the filter and FOCUS buttons.

- Press the filter button so that the required symbol appears on the viewfinder.
 * when the subject is illuminated by a halogen or tungsten lamp.
 * when you shoot in the daytime outdoors.
- For manual focus, press the FOCUS button to MANUAL. A focus-aid indicator will appear on the viewfinder.

One-hour recording

- To record longer on a single cassette, use the LP (Long Play) mode.
- For LP recording, a higher-capacity battery pack may be used.
- SP: 30 minutes
 LP: 60 minutes

Auto or manual?

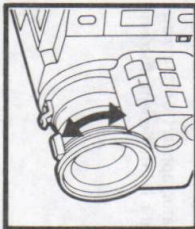
- Iris control is always automatic. Therefore, possible combinations of auto and manual functions are as follows:

Control / Function	FULL AUTO	FOCUS / *	FOCUS
White balance	Auto	Manual	Auto
Focus	Auto	Auto	Manual
Iris	Auto	Auto	Auto

Manual focus

If the manual focus mode is selected, proceed as follows:

- ① Zoom in on a subject by pressing the "T" button.
- ② Focus onto it by turning the focus ring.
- ③ Determine the composition by pressing the "W" button.



Note:

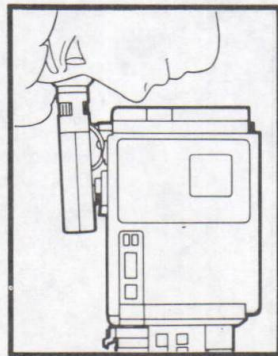
- When you use the manual focus mode, be sure to focus the lens in the maximum telephoto position. If you focus in on a certain subject in the wide-angle position, sharply-focused images cannot be obtained when zoomed up because the depth of field is reduced at longer focal lengths.

FOCUS INDICATORS

The focus indicators on the viewfinder screen function in the manual focus mode.

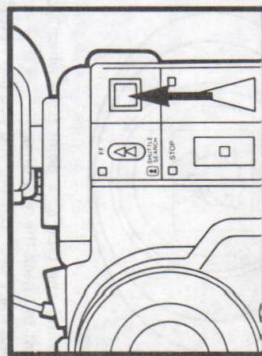
Condition	Indication	Corrective operation
Focus point behind the subject		Turn the focus ring clockwise until the centre square lights.
Correct focus		Keep the focus ring in the same position.
Focus point in front of the subject		Turn the focus ring counterclockwise until the centre square lights.
Indication not possible because of low contrast		Estimate the subject distance and set the focus ring referring to the distance scale on it.

6



Determine the focus and composition by referring to the viewfinder image. For zooming, see page 22.

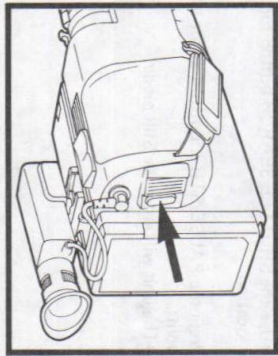
Rehearsal



If you wish to rehearse shooting angles, compose scenes, etc., without actually recording on the tape, press the MONITOR button, instead of REC STBY. The aimed-at scene will appear on the viewfinder screen. For full-auto rehearsal, also press the FULL AUTO button. To engage the Recording Standby mode from rehearsal, press the REC STBY button. To only disengage the Rehearsal mode, press the STOP button.

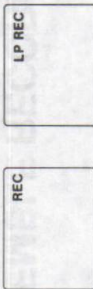
- Rehearsal is possible whether a cassette is loaded or not.
- With a cassette loaded, rehearsal is not possible during rewind or fast forward.
- The power save circuit does not function during rehearsal. (For power save function, see page 20.)

7

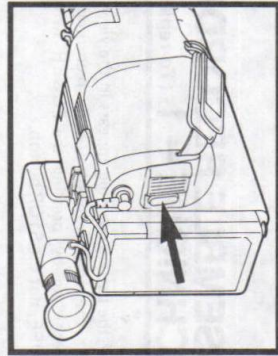


Press the start/stop button.

- This causes REC or LP REC on the viewfinder screen to appear, showing that recording is actually taking place.



8



To stop recording temporarily, press the start/stop button once again.

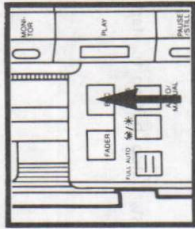
9

To restart recording, press the start/stop button.

- For a pause longer than 5 minutes, press the POWER switch to OFF.
- If the Recording Standby mode continues for longer than about 5 minutes, the unit switches itself off automatically. To restart recording, turn the power on. This makes clean assembled recordings possible even after a long pause.

Backlight compensation

- Press the BLC button. While it is being pressed, the iris is 1 - 2 f-stops wider than that adjusted automatically.

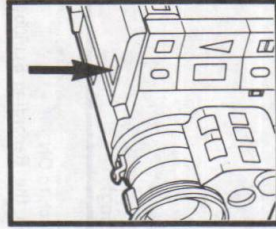


When excessive lighting is located in back of the subject, correct exposure may not be obtainable. To compensate for this, use BLC.



Quick Review function

- If you want to review the end of the last recording for confirmation, press the QUICK REVIEW button from the Record-Pause mode; the tape will be rewound for about 2 seconds of programme time and played back automatically for this section, after which it will stop in the Record-Pause mode in standby for the next shot.



Notes:

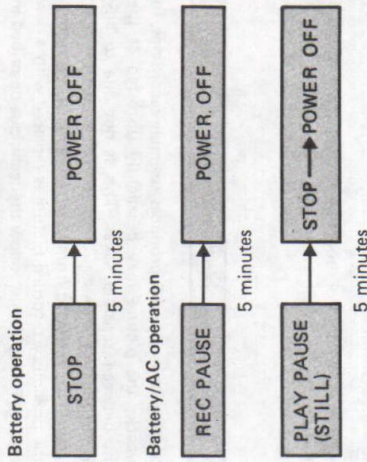
- The TRACKING control should be at its centre position.
- Distortion might occur when playback starts. This is normal.

Assemble recordings

- Repeating steps 8 and 9 produces assemble recordings. In playback, the picture may be slightly distorted at the point between separate takes. This is not due to any defect of the unit.
- If recording is restarted from the Stop mode, a few frames of the previously recorded picture is replaced with a new recording. To avoid this, follow the technique described in "Assemble Recording Technique 2" on page 20.

POWER SAVE AND TAPE PROTECTION CIRCUIT

- To save battery power, the GR-C7E (when battery-operated) switches itself off automatically when left for longer than 5 minutes in the Stop mode.
- To protect the tape, the GR-C7E (regardless of whether battery-operated or AC-powered) releases tape tension slightly and switches itself off automatically if left for longer than 5 minutes in the Recording Standby (Record-Pause) mode.
- For the same reason, the GR-C7E enters the Stop mode and switches itself off automatically if left for longer than 5 minutes in the Still (Play-Pause) mode.



ASSEMBLE RECORDING TECHNIQUE – 1 (To replace the battery pack during recording)

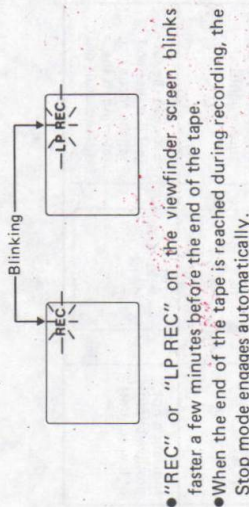
- 1 If the battery warning appears in the viewfinder or the counter display while recording, stop recording by pressing the POWER switch to OFF, not the STOP button.
- 2 Replace the battery pack with a charged one.
- 3 Press the POWER switch to ON.
• The unit will be in the Recording Standby mode.
- 4 Press the recording start/stop button to start recording.

ASSEMBLE RECORDING TECHNIQUE – 2 (To record onto a partially recorded tape)

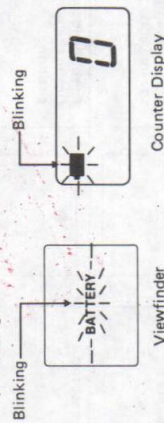
- 1 Play back the tape to a point where you wish a new recording to start.
• Use the SHUTTLE SEARCH button for faster location.
- 2 Press the PAUSE/STILL button at the located point.
• The unit will enter the Still mode.
- 3 Press the REC STBY button.
• The unit will enter the Recording Standby mode.
- 4 Press the recording start/stop button to start recording.

Warnings

Tape-end warning



Battery warning

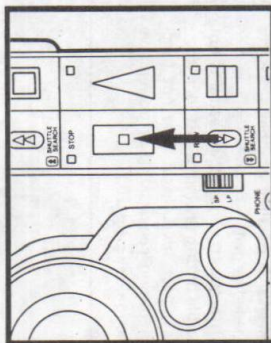


- When the battery power is coming to an end, a battery warning indication appears both in the viewfinder and the counter display. Replace the battery pack with a fully charged one.
- After these indications appear, the power turns off automatically. In this state, however, pressing the POWER switch while holding EJECT button pressed, turns the power on and ejects the cassette.

Low-light warning



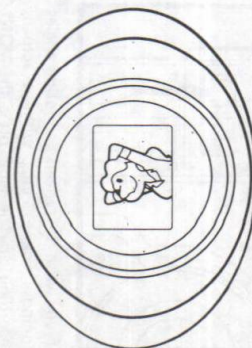
- If the blinking "LIGHT" indicator appears on the viewfinder screen, the amount of light is insufficient. Increase the lighting.



To end recording, press the STOP button.

- After making sure that the tape has stopped, press the POWER switch to OFF.

Viewfinder Monitoring



- Rewind the tape to a point from which you want to check the recording.
- Press the PLAY button, and you can view the playback picture on the viewfinder screen.

Notes:

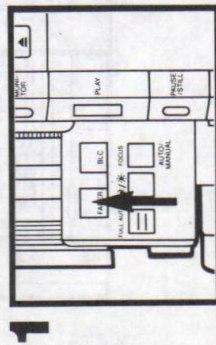
- Pressing the PAUSE/STILL button during playback stops the picture on the viewfinder screen.
- Shuttle search is also possible in both directions.

SPECIAL TECHNIQUES

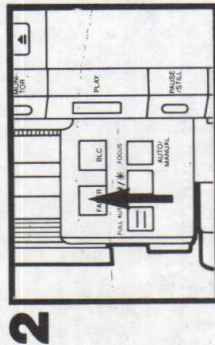
Fade-in/out

The GR-C7E is equipped with an automatic fade mechanism for allowing smooth fade-in and fade-out with a white-coloured blank screen. Audio also fades with video.

Automatic fade-in



Determine the composition in the Recording Standby mode and press the FADER button twice to set the fade-in standby mode. The screen will become white quickly.



Press the start/stop button and press the FADER button. Fade-in will start and be completed in about 3 seconds.

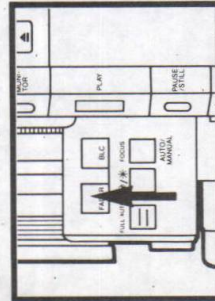
NOTE

- If you want to delay the start of fade-in, press the start/stop button and, after a desired time has elapsed, press the FADER button.

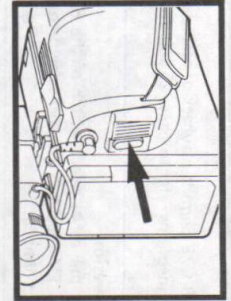


1 Automatic fade-out

Start shooting as usual.



Press the FADER button where you want fade-out to start. The fade-out will be completed in about 3 seconds.



Stop shooting by pressing the start/stop button after fade-out has been completed.

Zooming

When the focal length of the lens is varied by turning the zoom ring, the image appears to come nearer to or retreat from the viewer.



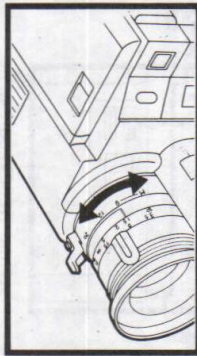
Power zooming

Press "T" for zooming in and "W" for zooming out.



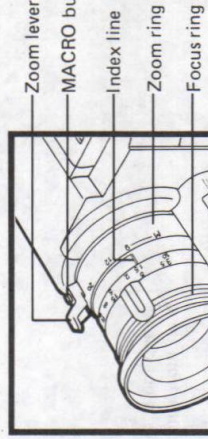
Manual zooming

Rotate the zoom lever downwards for zooming in and upwards for zooming out.

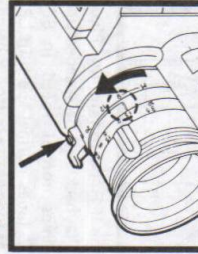


Macro Shots

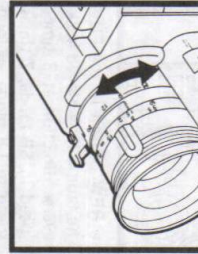
Normally, focusing is possible only for subjects that are more than 1 m away from the camera. By setting the lens to the Macro mode, it is possible to manually focus in on any subject located inside that limit, right up to the front of the lens. The MACRO and ZOOM ranges combined give continuous shooting ability from close-up to infinity.



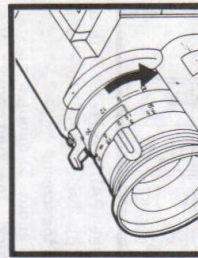
Engage MACRO



Focus



Release MACRO



While pressing in the macro button, turn the zoom ring in the direction of the arrow until the number "g" on the zoom ring passes the index line.

To release the Macro mode, turn the zoom ring in the direction of the arrow until the number "g" passes the index line.

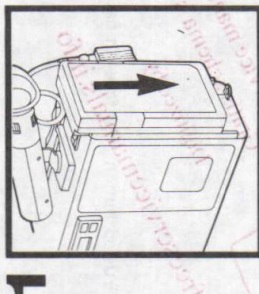
- Use the zoom ring to focus in the MACRO range.
- Turning the focus ring will slightly alter the angle of view of the lens.
- The zoom and auto-focus mechanisms do not function during macro shooting.

PLAYBACK

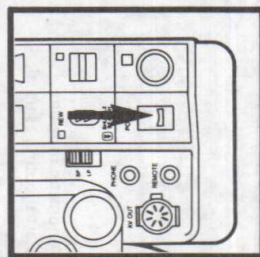
The GR-C7E permits playback of recorded VHS-C video cassettes. For connections refer to pages 25 and 26.

Preparation

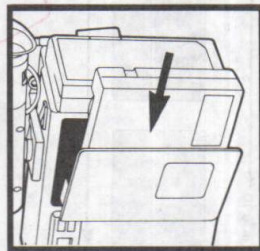
- Set the aerial select switch of the RF-P1E RF unit to VIDEO and the TV receiver's channel selector to your video channel (specified AV channel).



Connect a power supply unit. (Battery or AC operation: see page 12.)

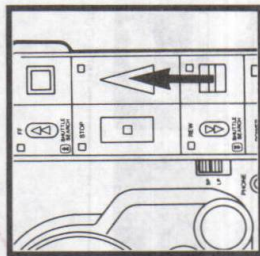


Press the POWER switch to ON.



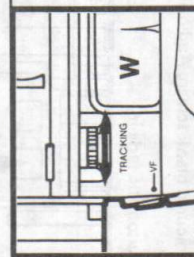
Insert a pre-recorded cassette.

First remove tape slack, then insert the cassette correctly. See page 5.



Press the PLAY button. Playback will start.

- The SP/LP switch may be in either position. The SP or LP mode recording is automatically detected and played back at a correct speed respectively.
- When the end of the tape is reached during playback, the Rewind mode engages automatically.

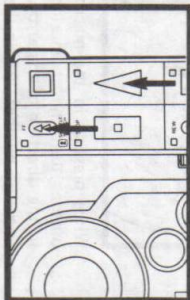


Tracking adjustment

If noise bars appear on the screen, adjust the TRACKING control. Turn it slowly in either direction to minimise noise bars. After playing a particular tape, return the TRACKING control to the centre position.

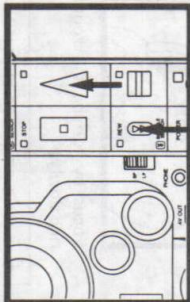
Shuttle Search

Fast-speed playback in the forward direction



Press the FF button in the Play mode. Playback will be speeded up to 3 times normal speed in SP mode, 7 times normal speed in LP mode, as long as the button is being pressed.

Fast-speed reverse playback

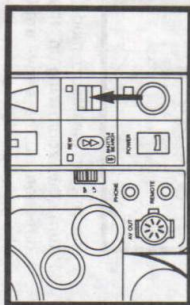


Press the REW button in the Play mode. The tape will be played back in the reverse direction at 3 times normal speed in SP mode, 7 times normal speed in LP mode, as long as the button is being pressed.

Note

- Noise may appear or pictures may become monochrome from time to time during Shuttle Search and still playback. This is not due to any defect of the unit.

Still playback

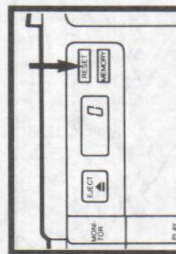


Press the PAUSE/STILL button during playback. The picture will stop on the screen.

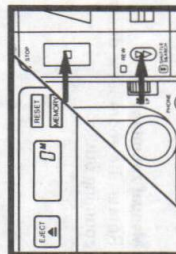
- After about 5 minutes of still playback, the unit enters the Stop mode automatically for tape protection and switches itself off.

Counter Memory Function

The GR-C7E incorporates a counter memory mechanism which facilitates locating a specific tape segment.



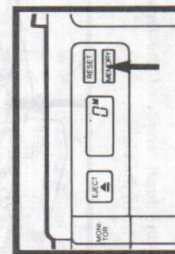
Press the RESET button to reset the counter to "0".



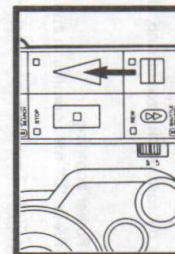
After recording or playback, press the STOP button, then the REW button. The tape will automatically stop at the counter reading of around "0".

Notes:

- The counter memory function is effective in the Fast Forward mode as well.
- To cancel the memory function, press the MEMORY button.
- When the power supply unit is disconnected, all indications on the counter display disappear and the counter memory function is cancelled after about 30 seconds.



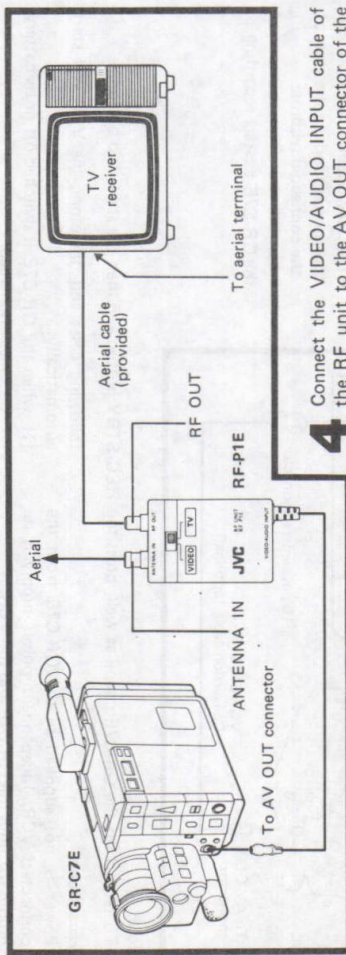
Press the MEMORY button. The "M" mark will appear.



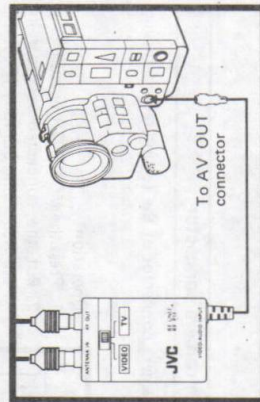
Press the PLAY button to start playback.

CONNECTION TO A TELEVISION FOR PLAYBACK

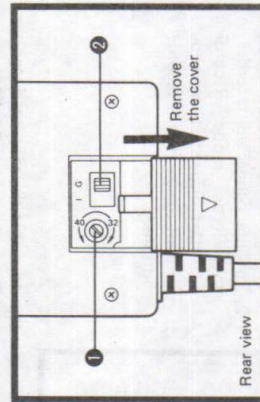
The GR-C7E includes playback circuits and allows playback of pre-recorded cassettes simply by connecting to a television set.



4 Connect the VIDEO/AUDIO INPUT cable of the RF unit to the AV OUT connector of the GR-C7E.



5 Adjust the RF converter output channel according to your VIDEO CHANNEL.

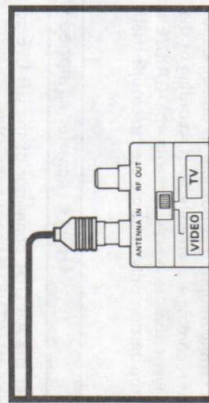


1 RF converter channel adjustment screw

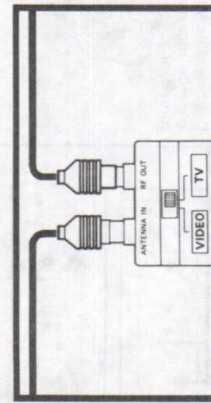
The RF unit permits playback of video and audio recordings through a TV receiver. The signals from the RF unit are viewed through a vacant channel not used for broadcasting in your area. The output frequency of the RF converter has been set to correspond to a broadcast on UHF channel 36. To view playback pictures from the GR-C7E with your TV receiver, tune its specified AV channel to UHF channel 36. If channel 36 is employed for

1 Remove the aerial cable from the TV receiver.

2 Connect the aerial cable to the ANTENNA IN terminal of the RF unit.



3 Connect the RF OUT terminal of the RF unit to the aerial terminal of the TV receiver using the provided aerial cable.



PRECAUTIONS FOR RF-P1E

- For exclusive use with the GR-C7E VideoMovie.
- Do not disassemble or remodel the RF-P1E.
- Do not expose it to strong shocks.
- Unplug the connected equipment during lightning storms. (Never touch the aerial cable.)

broadcasting in your area, readjust the RF converter output channel to one of the vacant channels between 32 and 40.

1. Set the AV channel of the TV receiver to one of the vacant channels.
2. Power the GR-C7E.
3. Put the GR-C7E in the Rehearsal mode (see page 17).
4. Set the VIDEO/TV switch of the RF unit to VIDEO.

5. While monitoring the output signal on the TV screen, turn the RF converter channel adjustment screw **1** so that the monitored picture comes in most clearly.

• When you wish to view video cassette programmes, always select the AV channel on the TV receiver which has been tuned to the output frequency of the RF converter.

2 TV system select switch (I/G)

When you use a TV receiver built to the British PAL standard, shift the system select switch **2** to "I".

CAUTION:

To view the GR-C7E recordings with a TV receiver, use a TV receiver having a specified AV channel and employ this AV channel as your VIDEO CHANNEL, otherwise playback may be disturbed with vibrating or bending pictures. AV channels refer to channels exclusively for video playback; because of AFC circuits applied to these channels, the playback pictures can be stabilised. Recent TV receivers have one or more AV channels.

OPERATION

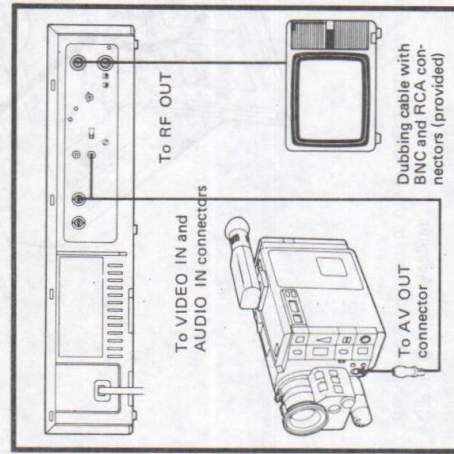
Viewing video cassettes being played back with the GR-C7E

To view video cassettes or to monitor the recording, set the VIDEO/TV switch of the RF unit to VIDEO and the TV channel selector to the channel corresponding to the RF output channel.

Viewing television programmes

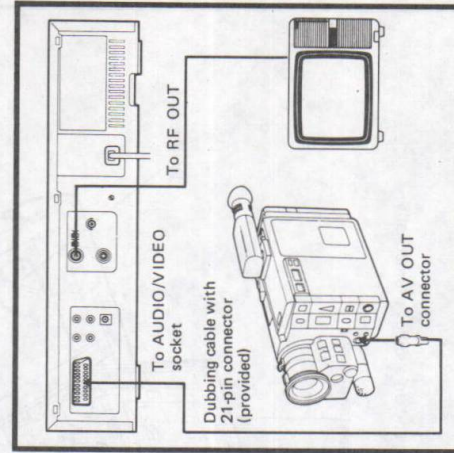
Set the VIDEO/TV switch to TV, and the TV receiver will function as usual.

TAPE DUBBING OR EDITING



Connection

1. Connect the AV OUT connector of the GR-C7E to the AUDIO IN and VIDEO IN connectors of the video recorder using either of the provided dubbing cables, depending on the deck you are using.
2. Connect a television to the video recorder to monitor the picture while dubbing.



Operation

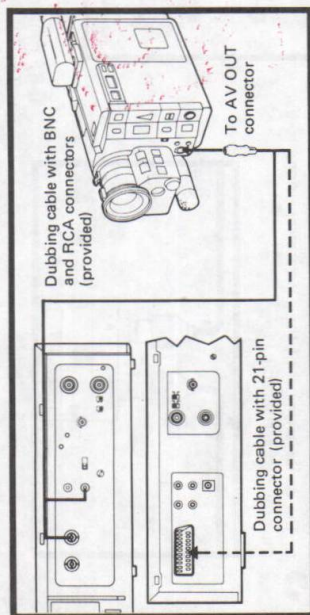
- Put the GR-C7E in the Play mode and the connected recorder in the Record mode to copy the recording. To edit out unwanted material, press the recorder's PAUSE button.

USING THE GR-C7E AS A VIDEO CAMERA

For continuous documentation of longer events, the GR-C7E can be used as an independent video camera in combination with either a deck-type or portable video recorder.

Using a recorder not equipped with a 10-pin camera connector

- Connect the AV OUT connector of the GR-C7E to the AUDIO IN and VIDEO IN connectors of the video recorder using either of the provided dubbing cables, depending on the deck you are using.



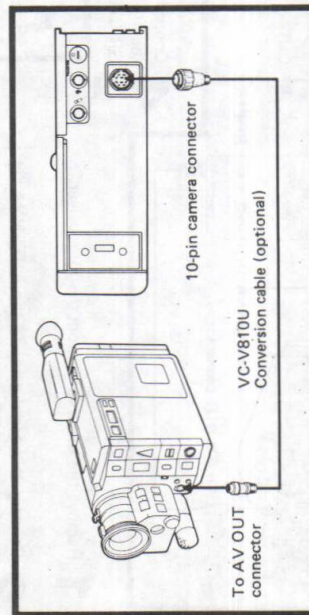
Note:

- In this configuration, it is possible to obtain a continuous recording and an edited-out recording of the same event simultaneously, because the GR-C7E's start/stop button only controls the tape inside itself

while another tape loaded in the connected recorder continues running. To record on the GR-C7E's tape, follow the same recording procedure as mentioned before, press REC STBY and then the start/stop button.

Using a recorder equipped with a 10-pin camera connector

- Connect the AV OUT connector of the GR-C7E to the 10-pin camera connector of the second recorder using the optional VC-V810U conversion cable.



Note:

- To record on the GR-C7E's tape as well, press the REC STBY button and then the start/stop button.

Precautions

- Power is not supplied to the GR-C7E from the connected VCR. Independent power supply is required for both the GR-C7E and the VCR.
 - If you stop recording by pressing the GR-C7E's start/stop button, the connected VCR also stops in the Pause mode. However, the pause command signal is not delivered to the connected VCR in the STOP or REC LOCK mode.
- following cases and, therefore, the VCR will start automatically:
- (1) when the GR-C7E is switched off or its battery becomes discharged.
 - (2) when the VC-V810U cable is disconnected.
- Therefore, before replacing the battery or tape for the GR-C7E, put the connected VCR either in the STOP or REC LOCK mode.

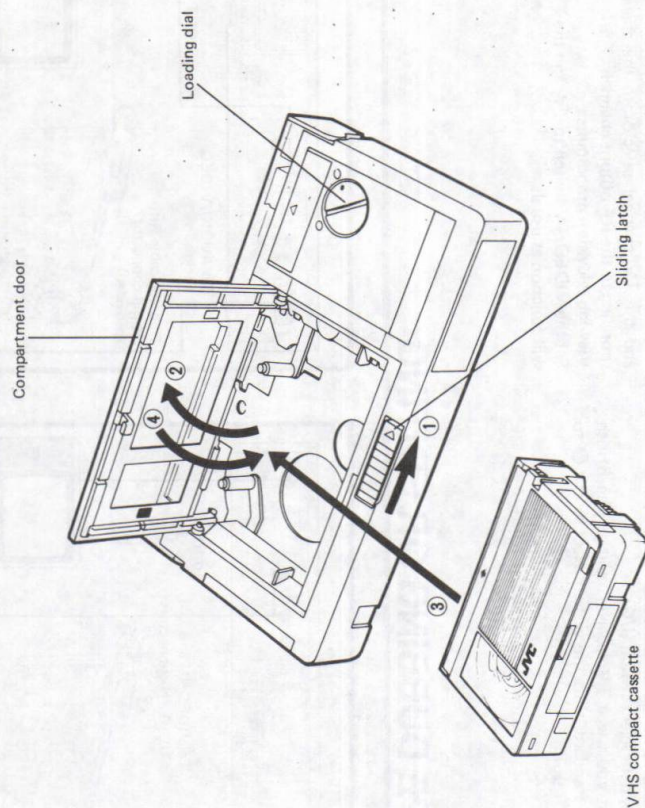
USING THE CASSETTE ADAPTER (provided)

The VHS compact video cassettes recorded with the GR-C7E can be played back with a standard VHS machine by using the provided C-P3U Cassette Adapter.

(A compact video cassette installed in the cassette adapter is fully compatible with a standard VHS machine for both recording and playback.)

• C-P3U Cassette Adapter

Being battery-operated, the C-P3U performs tape loading and unloading automatically.



For more details refer to the instruction manual of the C-P3U.

Notes:

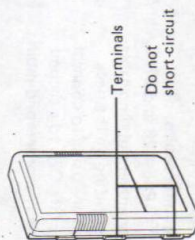
- To view compact video cassettes recorded with VideoMovie using a cassette adapter, employ the AV channel of a TV receiver.
- During special-effects playback (slow motion, still frame, etc.) the picture may vibrate or noise bars may appear on the screen.

CHARGING THE BATTERY PACK

To charge the battery pack, use the exclusive AC power adapter/battery charger AA-V2EG (provided/optional) or car battery charger BH-V5E (optional).

A WORD ON THE EXCLUSIVE NB-P5U/P6U/P7U/P8U BATTERY PACKS

The NB-P5U/P6U/P7U/P8U are nickel-cadmium batteries. Give attention to the following to make the most of their characteristics.



Temperature ranges:

The recharging time is based on room temperature of 20°C.
The lower the temperature, the longer the recharging time.

For charging: 10°C to 35°C

For operating: -10°C to 40°C

For storing: -10°C to 30°C

The battery pack has been kept in the uncharged state for shipment. Therefore, before use, charge it.

To avoid hazard:

1. Do not burn.
 2. Do not short circuit the terminals.
 3. Do not modify or disassemble.
 4. Use only specified chargers.
- To prevent damage and prolong service life:
1. Avoid dropping, unnecessary shocks.
 2. Avoid repeated charging without discharging.
- This unit has a limited service life:
- Near the end of its service life, when it begins to deliver less recording time per charge, purchase a replacement.
- It is normal for the unit to be warm after charging or use.

PRECAUTIONS FOR AA-V2EG

- If used near a radio, the provided AA-V2EG AC power adapter/battery charger may interfere with reception.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.

Recording time for the GR-C7E

NB-P5U 30 min.	NB-P7U 60 min.
NB-P6U 45 min.	NB-P8U 120 min.

- The recording time per charge is influenced by the duration of recording standby, frequency of zooming, etc. It is safer to have spare battery packs.

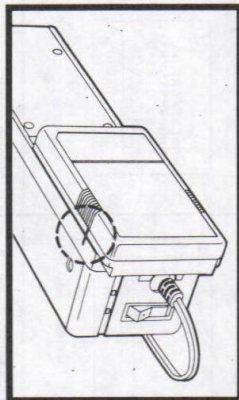
Charging procedure

Charging time

NB-P5U 60 min.	NB-P7U 90 min.
NB-P6U 60 min.	NB-P8U 120 min.

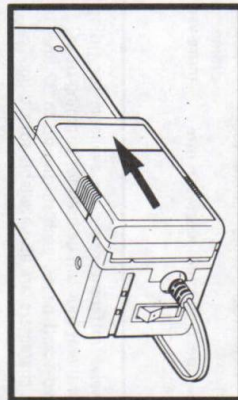
- The charging time differs depending on the ambient temperature and the condition of the battery pack.

- When sliding the battery pack on or off the charger, make sure that the charger's POWER switch is set to OFF.



5

Align the marks.

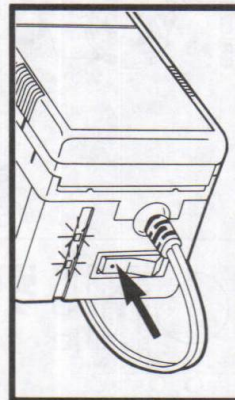


2

Slide the battery pack in the direction of the arrow until it locks in place.

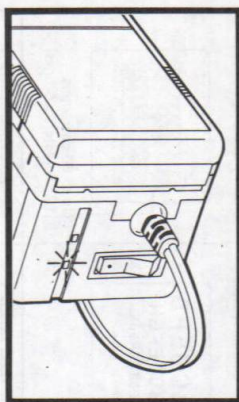
3

Connect the AC power cord to a wall outlet.



4

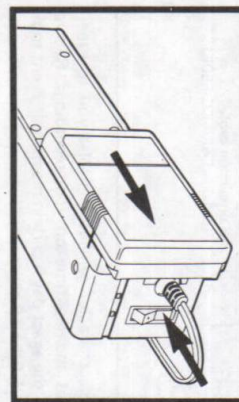
Press the POWER switch to ON. The POWER indicator will light first, then the CHARGE indicator will light in a few seconds.



When charging is completed, the CHARGE indicator goes out.

CAUTION

- If the POWER button is left in its ON position after the CHARGE indicator goes out, additional charging continues with a small amount of current.
- Faint oscillation may be heard at the start of charging. This is not due to any defect of the unit.



6

Press the POWER switch to OFF.

- Remove the battery pack by sliding it off.
- The battery pack becomes warm immediately after being charged. This is not due to any defect of the unit.

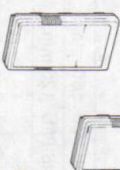
Note:

- The optional BH-V5E Car Battery Charger can charge the batteries from a car battery. For details refer to the instructions of the BH-V5E.

SYSTEMS FLEXIBILITY

For maximum enjoyment, make the most of the provided or optional accessories depending on the situation. For availability (whether provided or optional) refer to page 36.

- ① Regular battery pack NB-P5U
Page 12



- ② Medium-capacity battery pack NB-P6U
Page 12



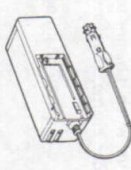
- ③ High-capacity battery pack NB-P7U
Page 12



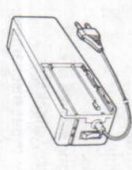
- ④ Super high-capacity battery pack NB-P8U
Page 12



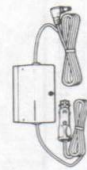
- ⑤ Car battery charger BH-V5E
Pages 12, 29 and 30



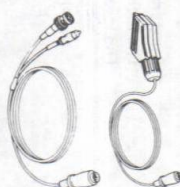
- ⑥ AC power adapter/battery charger AA-V2EG/EK
Pages 12, 29 and 30



- ⑦ Car battery cord AP-P1E
Page 12



- ⑧ Dubbing cables
Pages 26 and 27



- ⑨ A/V extension cable VC-P2U
Use to extend the A/V cable.



- ⑩ RF unit RF-P1E
Pages 25 and 26



- ⑪ Carrying bag CB-V21U
Use to carry the GR-C7E together with basic accessories.



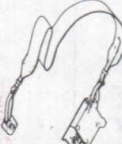
- ⑫ Conversion cable VC-V810U
Page 27



- ⑬ Remote control unit RM-P1U
Page 33



- ⑭ Shoulder strap VU-V17U
Page 11



- ⑮ Shoe adapter
Page 11



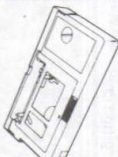
- ⑯ Character generator CG-P50E
Page 32



- ⑰ Compact video cassette EC-30
Page 5



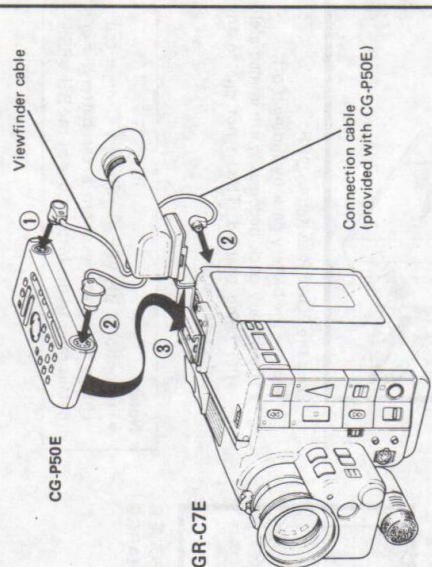
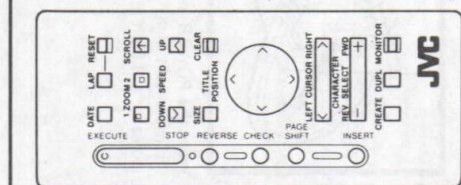
- ⑱ Cassette adapter C-P3U
Page 28



- ⑲ Carrying case CB-V50U
Use to carry the GR-C7E together with accessories.



CHARACTER GENERATOR (optional)



Mounting the character generator

- Connect the viewfinder cable to the character generator.
- Connect the character generator to the viewfinder cable connector (VF).
- Slide the character generator into the accessory shoe.

The separately available character generator enables you to superimpose the date, titles and lap time on your recordings. Record dates as a reminder of the exact day a certain memorable event took place. Compose creative titles to give tapes more personality. Superimposing the lap time on some sports or action scenes can add extra drama to their viewing. Various techniques are possible to introduce more variety to your video productions.

- Twelve different pages are available for titling. (Of them, four can be used for zooming titles.)

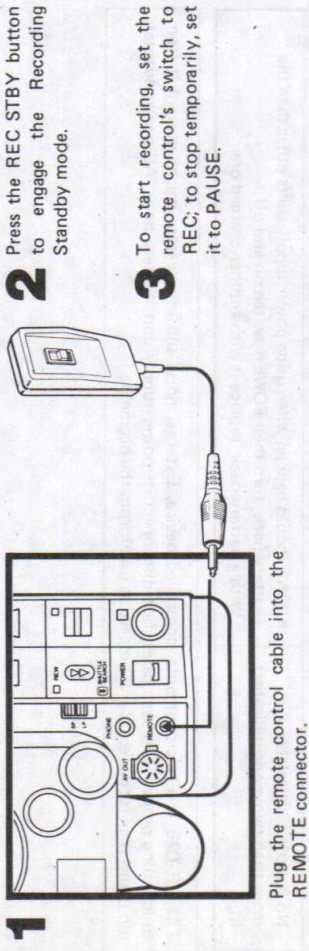
- Two scroll pages, each storing up to 37 lines of 12 characters, are also available for titling.

- Titles can be held in memory for about one year.
- For more details refer to the instruction manual of the CG-P50E.

Contents 	46 available characters 	Different character sizes 	Display capacity per page <p>Up to 60 characters (12 characters x 5 lines)</p>
Title 	Up/down scrolling 	Zooming from corner 	Zooming from centre
Flexible title positioning 	Up/down scrolling 	Zooming from corner 	Zooming from centre

REMOTE CONTROL UNIT (optional)

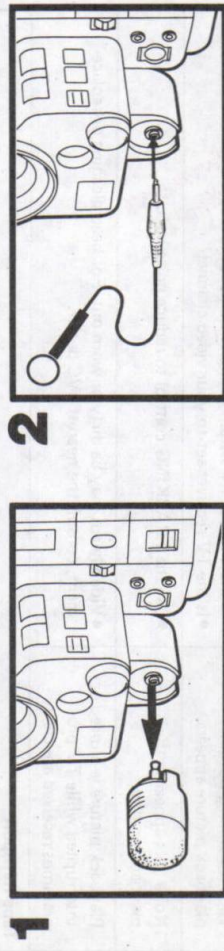
The remote control unit RM-P1U (optional) permits recording start/stop to be controlled from a distance.



- 1 Press the REC STBY button to engage the Recording Standby mode.
- 2 To start recording, set the remote control's switch to REC; to stop temporarily, set it to PAUSE.

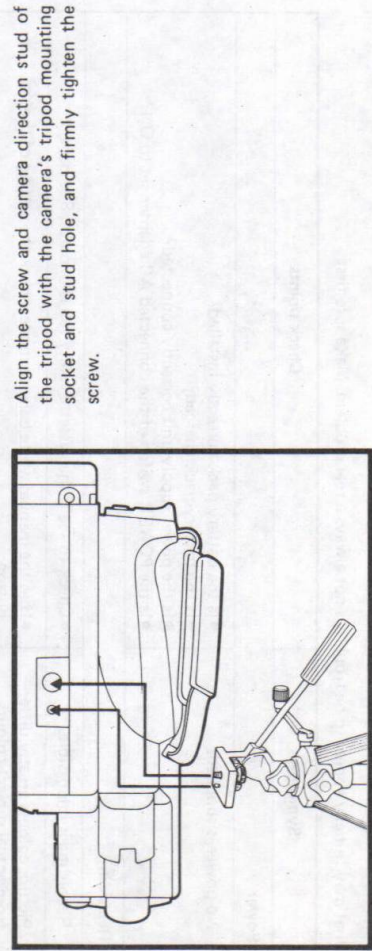
EXTERNAL MICROPHONE

The provided microphone can be detached. To use another microphone, do the following:



Remove the provided microphone by grasping the microphone's base and then pulling it straight out.

TRIPOD MOUNTING



Align the screw and camera direction stud of the tripod with the camera's tripod mounting socket and stud hole, and firmly tighten the screw.

SUPPLEMENTAL INFORMATION

What is "colour temperature"?

Light is composed of various colour components in different proportions. A relationship exists between the temperature of a light source and the colour components of the emitted light; as the temperature rises, the colour of the light varies from red, orange, yellow, white to blue in that order. "Colour temperature" is a value that expresses differences in colour among light sources, measured in Kelvin degrees. Bluish light has a higher colour temperature than reddish light.

What is "white balance"?

Making the colours look natural on TV is what white balance is all about. Because a camera is not as adaptable as the human eye, if a light source is reddish, white subjects in that light are recorded as reddish. White balance adjustment is performed to compensate for colour temperature variations of light so that whites are reproduced as white. Correct white balance makes all other colours correct. The GR-C7E can perform automatic white balance adjustment in the full-auto mode. However, if illumination is insufficient, white balance adjustment cannot be performed. To obtain correct colours, therefore, sufficient illumination is essential.

What is "illumination"?

"Illuminance" (also called 'luminance') is the intensity or brightness of light, expressed in lux. The GR-C7E is designed to provide best pictures under the conditions of a 700-lux illuminance, although shooting is possible all the way down to 15 lux. To obtain good pictures in very bright light, the use of an ND (neutral density) filter is recommended. See chart on this page.

How to get good colour pictures

The simplest way is to provide sufficient lighting (close to the camera's reference illuminance) and accurately adjust the camera to the colour temperature of that lighting. If light sources of different colour temperatures are used together, accurate white balance adjustment is very difficult. For example, if natural light is mixed with artificial light, which is likely to occur next to windows, correct colours of the subject are difficult to obtain. It is recommended in such cases that curtains in the room be closed to shut out light from outside. Also, when artificial lighting devices are used, they should all have the same colour temperature. For example, it is recommended that incandescent or halogen lamps not be used together with fluorescent lighting.

Colour temperatures of various artificial lighting


Type of illumination	Colour temperature
Tungsten lamp for home use	2800 K
Tungsten lamp for photographic use	3200 K
Quartz-halogen lamp	3200 K
Blue lamp for photographic use	5000 K
Fluorescent lamp	3500 K
Warm white	4500 K
White	5000 K
Daylight type	5500 K

What is "illumination"?

The values on this chart are approximated to give you a rough reference.

Unit: Lux	
100,000	<ul style="list-style-type: none">• Clear sky, mid-day, under sunlight (100,000)• Clear sky (10:00 a.m.) under sunlight (65,000)• Clear sky (3:00 p.m.) under sunlight (35,000)• Cloudy sky (mid-day) under sunlight (32,000)• Cloudy sky (10:00 a.m.) under sunlight (25,000)
10,000	<ul style="list-style-type: none">• By the window during the afternoon (3,500)
2,000	<ul style="list-style-type: none">• Cloudy sky (one hour after sunrise) (2,000)
1,000	<ul style="list-style-type: none">• Clear sky (one hour before sunset) (1,000)
600	<ul style="list-style-type: none">• Counters at department stores (500 – 700)
500	<ul style="list-style-type: none">• Bowling centre (500)• Office under fluorescent light (400 – 500)• Library (400 – 500)• Direct light of a flashlight at 1 m distance (250)
100	<ul style="list-style-type: none">• Streetlights at night (150 – 200)
80	
Minimum lighting for an object	
15	<ul style="list-style-type: none">• Cigarette lighter (at a distance of 30 cm) (15)
10	<ul style="list-style-type: none">• Candlelight (at a distance of 20 cm) (10 – 15)

What may initially appear to be trouble is not always a real problem. Make sure first . . .

Symptoms	Check points
Power	
No power is supplied.	<ul style="list-style-type: none"> Is the battery pack correctly installed? Is the battery pack charged? Is the power supply unit correctly connected? Is the POWER switch of the connected AC adapter set to ON?
Recording	
Recording is impossible.	<ul style="list-style-type: none"> Check to see if the cassette safety tab is in place. See page 5.
Picture colours greatly differ from actual subject colours.	<ul style="list-style-type: none"> If in the manual white balance mode, check the setting of the  button.
No sound is recorded with an external microphone.	<ul style="list-style-type: none"> Is the microphone's switch set to ON?
Recording does not start.	<ul style="list-style-type: none"> Have you pressed the REC STBY button first?
Playback	
Tape is running, but no playback picture appears.	<ul style="list-style-type: none"> Is the VIDEO/TV switch of the RF unit set to VIDEO? Is the TV receiver set to your video channel?
Noise bars appear in the playback picture.	<ul style="list-style-type: none"> Use the TRACKING control to reduce noise bars.
Playback picture is blurred or interrupted while TV programmes received are clear.	<ul style="list-style-type: none"> Video heads may be dirty or worn out. For head cleaning or replacement, consult the nearest JVC dealer.
Tape transport	
Tape stops during fast forward or rewind.	<ul style="list-style-type: none"> Is the "M" indication visible in the tape counter? If so, press the MEMORY button to cancel the memory function.
Rewinding or fast forwarding is impossible.	<ul style="list-style-type: none"> Check to see if the tape has already been fully wound on one reel or the other.
Other	
No function is available with more than two mode indicators lit.	<ul style="list-style-type: none"> If this should happen when using power supply units other than the battery pack, turn their POWER switch on and off. With a battery pack, replace it with another charged one.

The GR-C7E is a microcomputer-controlled device. External noise and interference might prevent it from functioning properly. In such cases, first disconnect its power supply unit (battery pack, AC power adapter, etc.); and then, reconnect it and proceed as usual from the beginning.

Format : VHS standard
Power source : DC 9.6 V \equiv
Power consumption : 8.0 watts
Signal system : PAL
Recording system : Luminance: FM recording
 Colour: Converted sub-carrier direct recording

Cassette : Conforms to VHS standard
Tape speed : VHS-C cassette
 (SP) : 23.39 mm/sec
 (LP) : 11.70 mm/sec

Recording time
 Max. (SP) : 30 minutes (with EC-30 cassette)
 (LP) : 60 minutes (with EC-30 cassette)

VIDEO
Output : 1 Vp-p, 75 ohms, unbalanced (via AV OUT connector)
S/N ratio : 40 dB (with Rohde & Schwarz noise meter)

AUDIO
Output : -6 dBs, 1 k-ohm (via AV OUT connector)
Microphone input : -68 dBs, high impedance, unbalanced

Pickup : 1/2"-format CCD
Minimum required illumination : 15 lux (at F 1.6)
Illumination range : 15 - 100,000 lux
Lens : F 1.6, f = 9 - 54 mm, 6:1 power zoom lens with auto iris control and macro position, filter diameter 49 mm

Viewfinder : Electronic viewfinder with 0.6" black/white CRT

Colour temperature : Switchable (3,200 K/5,500 K)

White balance adjustment : Full-auto/preset standard

Operating temperature : 0°C to +40°C

Operating humidity : Less than 80 %

Storage temperature : -20°C to +50°C

Weight : 1.4 kg (with viewfinder)

Dimensions : 121(W) x 165(H) x 223(D) mm (incl. viewfinder)

AA-V2EG SPECIFICATIONS
Power supply : AC 110 - 240 V \sim , 50/60 Hz
Power consumption : 30 watts
Rated output voltage : DC 9.6 V \equiv
Rated output current : 1.2 A
Charging system : Constant current, peak detection, timer controlled

Dimensions : 57(W) x 67(H) x 200(D) mm
Weight : Approx. 700 g

C-P3U SPECIFICATIONS
Type : VHS cassette adapter
Dimensions : 188(W) x 25(H) x 104(D) mm
Weight : 235 g

RF-P1E SPECIFICATIONS
Accessory : "R6"-size battery x 1
Output channel : UHF channels 32 - 40 (adjustable)

Initial channel setting : UHF 36

Power source : DC 8 V \equiv 20 mA (from VideoMovie)

Dimensions : 55(W) x 93(H) x 24(D) mm
excl. cable

Cable length : 2.5 m
Weight : Approx. 160 g

Provided accessories

High-capacity battery pack (1.0 AH) NB-P7U
 AC power adapter/battery charger AA-V2EG

RF unit RF-P1E

Aerial cable

Dubbing cable x 2

Compact video cassette EC-30

Cassette adapter C-P3U

Electronic viewfinder VF-V7E

Shoe adapter

Lens cap

Shoulder strap VU-V17U

Carrying case CB-V50U

Grip pad

Optional accessories

Regular battery pack (0.5 AH) NB-P5U

Medium-capacity battery pack (0.7 AH) NB-P6U

High-capacity battery pack (1.0 AH) NB-P7U

Super high-capacity battery pack (1.8 AH) NB-P8U

AC power adapter/battery charger AA-V2EG/EK

Car battery charger BH-V5E

Car battery cord AP-P1E

Cassette adapter C-P3U

Compact video cassette EC-30

Carrying bag CB-V21U

Shoulder strap VU-V17U

Carrying case CB-V50U

Remote control unit RM-P1U

A/V extension cable VC-P2U

Conversion cable VC-V810U

Character generator CG-P50E

Design and specifications subject to change without notice.

SECTION 1 DISASSEMBLY

1.1 DISASSEMBLY

1.1.1 Electronic viewfinder removal

1. Refer to Fig. 1-1-1 and disengage the 8-pin connector. While gently pressing the viewfinder upward, slide it in the direction shown by the arrow (A) to remove it.

1.1.2 Viewfinder shoe and upper case

1. Take out two screws indicated by A in Fig. 1-1-2(A). Raise the shoe as indicated by arrow (B) and remove the shoe and shoe clip.

2. Refer to Fig. 1-1-2(A) and 1-1-2(B), and take out screws C, D, E, F and G (two screws).
3. As shown in Fig. 1-1-2(C), a plastic tab joins the upper case to the front panel. Gently press at the location of the tab and slide, then raise the upper case as indicated by the arrow (H). Raise it only slightly to allow detaching the tape counter (use care not to damage the flexible cable of the counter), then remove the upper case completely.

Note: The two screws A of Fig. 1-1-2(A) are the longest.

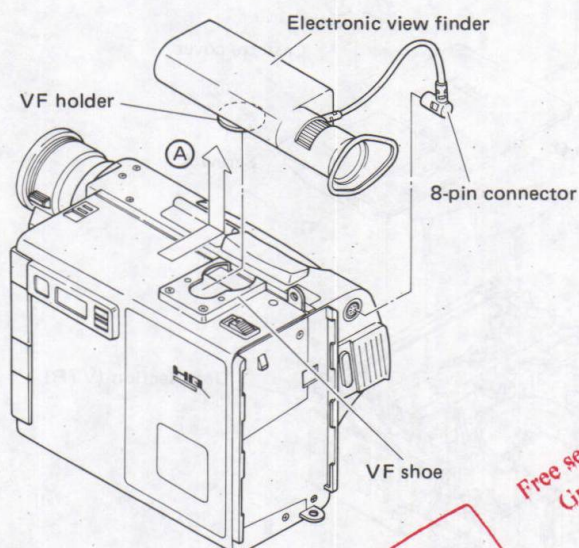


Fig. 1-1-1

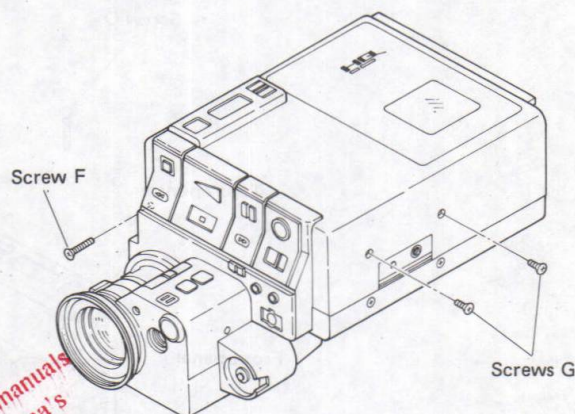


Fig. 1-1-2 (B)

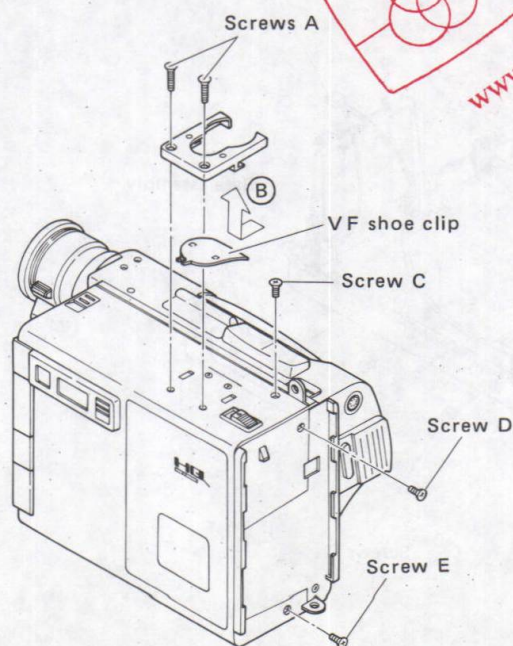


Fig. 1-1-2 (A)

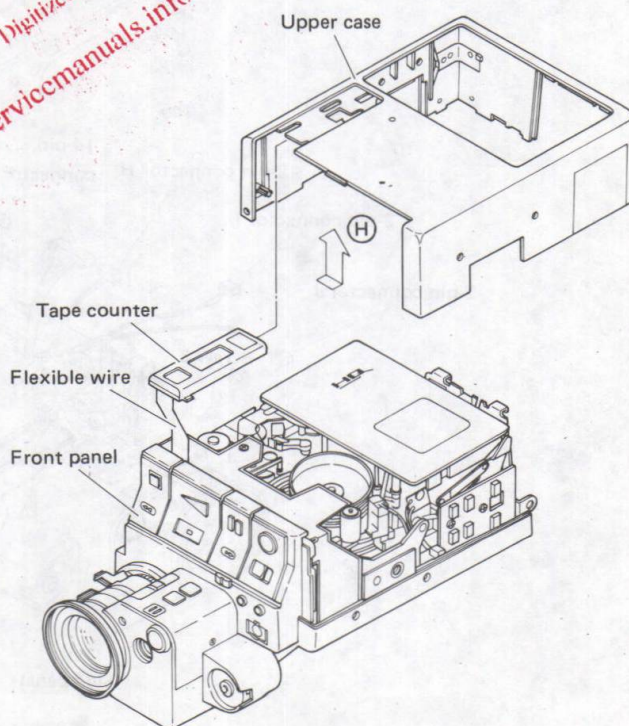


Fig. 1-1-2 (C)

1.1.3 Cassette cover and deck section

1. Refer to Fig. 1-1-3 and take out two screws A that secure the cassette cover. Raise the cassette cover as indicated by the arrow (B) to remove it.
2. Take out two screws C and remove the base assembly.
3. Take out three screws D and one screw E.
4. The front panel and side panel are engaged by a plastic rim. Carefully squeeze the portions of the side panel indicated by the arrows (K) between thumb and forefinger and raise the deck section slightly to disengage it.
5. Disconnect five connectors F, G, H, I and J. The deck and operation sections can then be separated from the camera section.

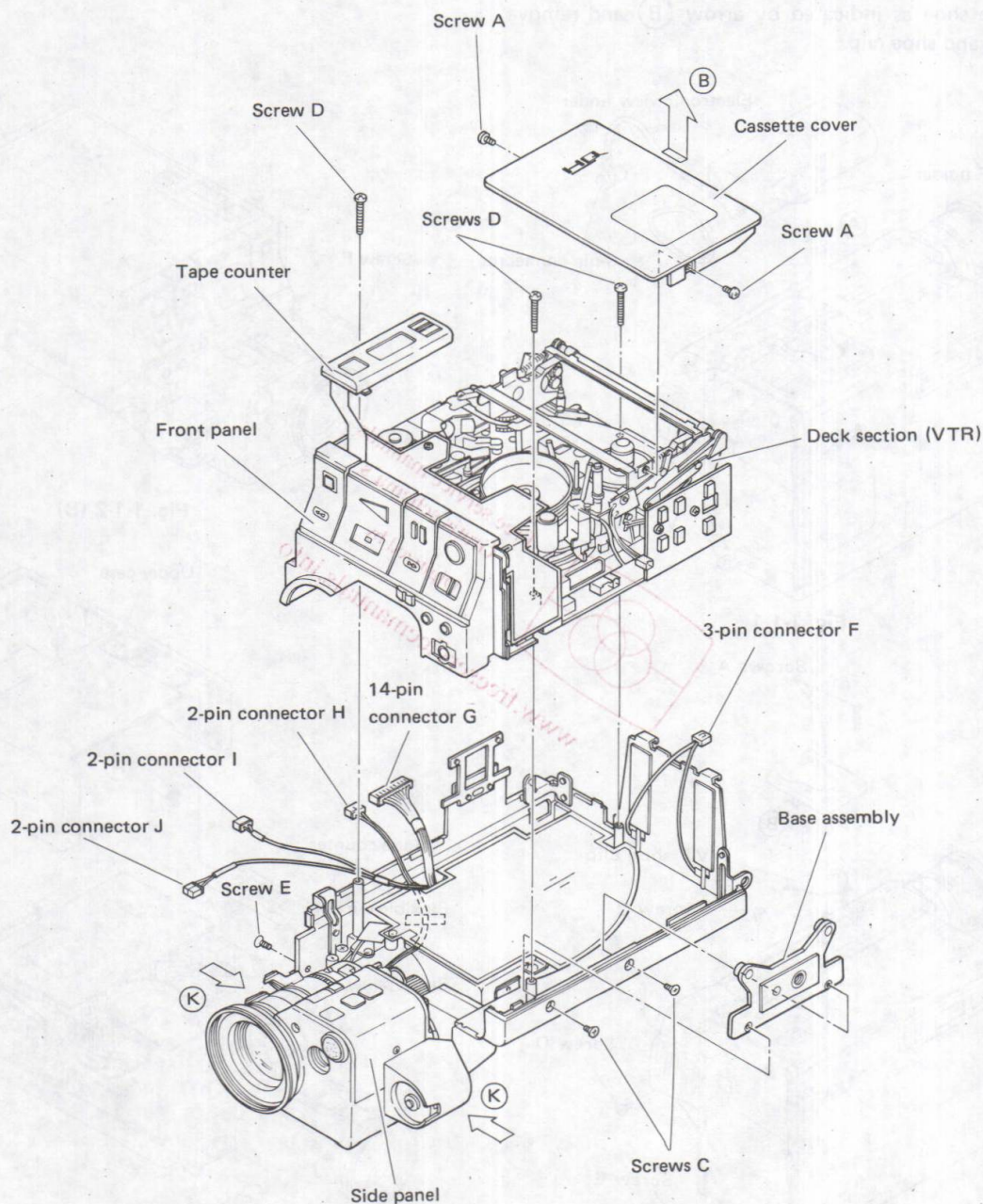


Fig. 1-1-3

1.1.4 Lower case

1. Refer to Fig. 1-1-4. Take out screws A and B, and remove the insulator sheet.
2. Take out screws C, D and E. Disengage the side panel from the lower case by shifting and raising it as shown by the arrow (F). Disconnect the connector G.
3. Remove the screw H, screw I and plate J. Then take out screws K and L.
4. Raise the camera section slightly and disconnect connectors M, N and O (which are connected to the EE and IND board) to remove the camera section from the lower case.

Note: Use care not to damage the wires and flexible cables.

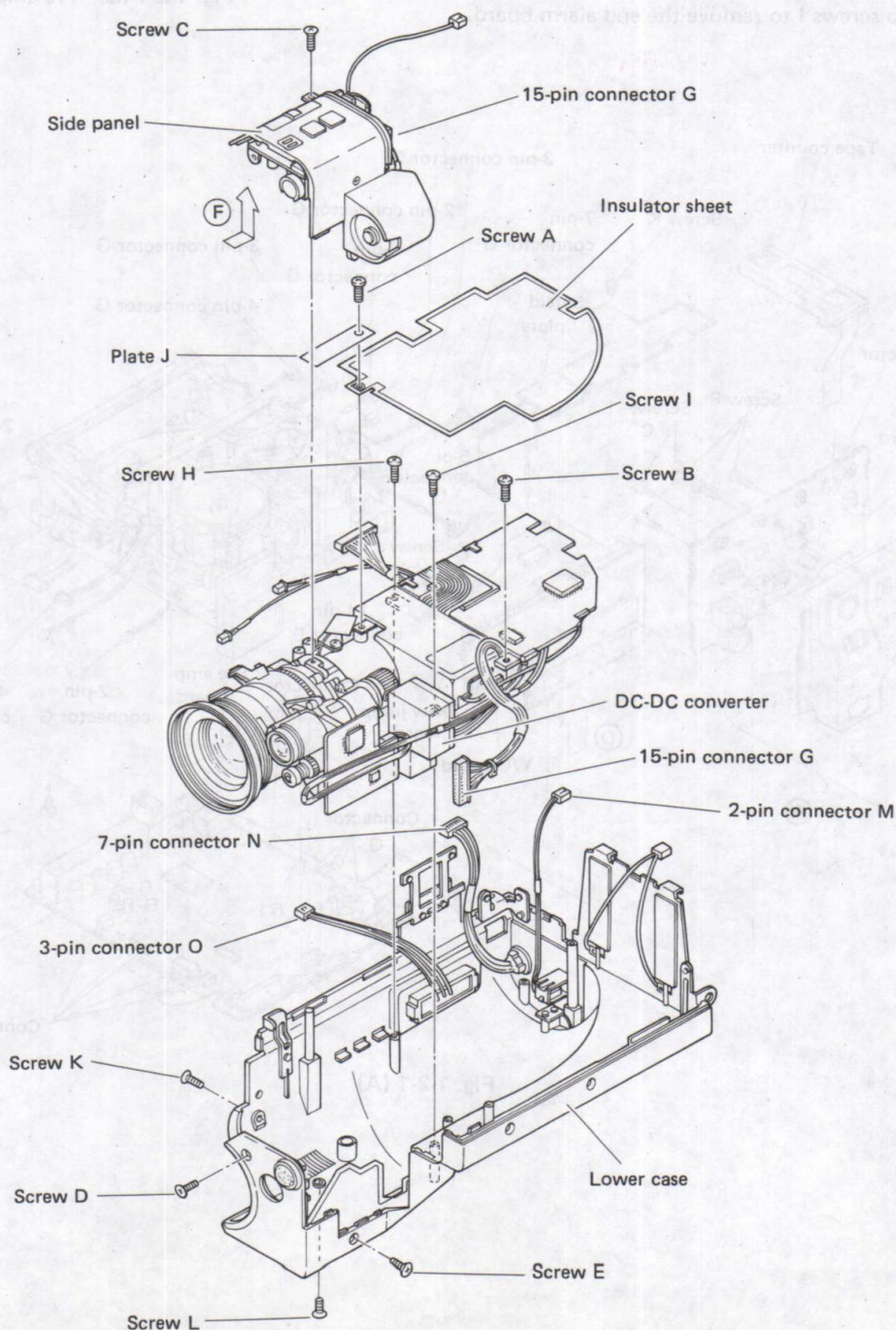


Fig. 1-1-4

1.2 CIRCUIT BOARD REMOVAL

1.2.1 Deck section

1. Refer to Fig. 1-2-1 and remove the front panel in the direction shown by the arrow (A). Then take out three screws B and two screws C to remove the operation board. Use care regarding the front panel push buttons.
2. Take out screws J and K, and remove the shield plate. Then remove the skew jump board and Y/C board in the direction (D) and disconnect connector E, which is connected to the pre amp board.
3. Take out the screw F. Peel off two strips of tape that secure the main board. Disconnect twelve connectors G and remove the main board in the direction (H).
4. Take out two screws I to remove the end alarm board.

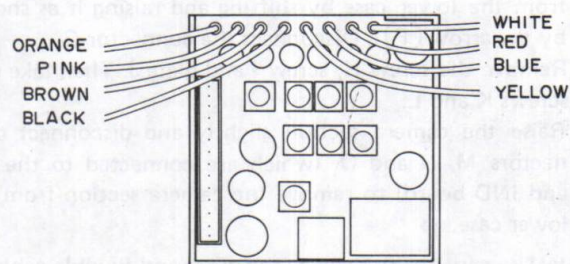


Fig. 1-2-1 (B) Pre amp wires location

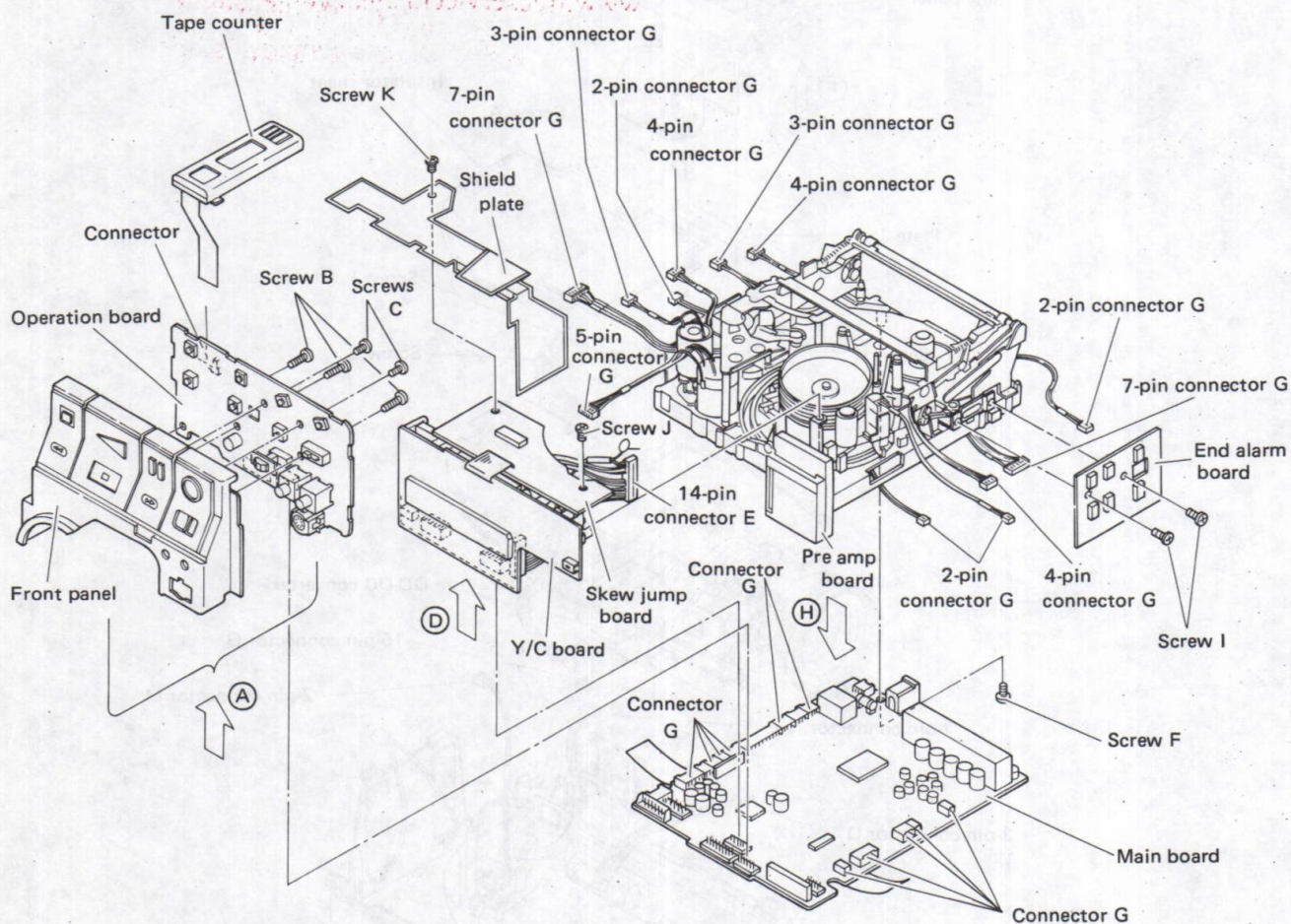


Fig. 1-2-1 (A)

1.2.2 Control board

1. Refer to Fig. 1-2-2 and take out four screws A. Disconnect connector B and remove the control board from the side panel.

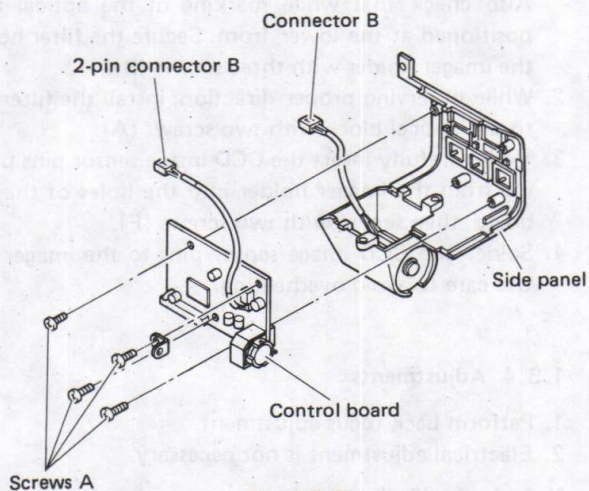


Fig. 1-2-2

1.2.3 Camera section

1. Refer to Fig. 1-2-3 and disconnect the connector A. Remove board holders B and C in the directions D and E.
2. Remove the regulator board and EE & IND board in the directions F and G.
3. The regulator board is attached directly to the EE & IND board by an 8-pin connector. Similarly, the EE & IND board is attached directly to the camera board by three connectors.



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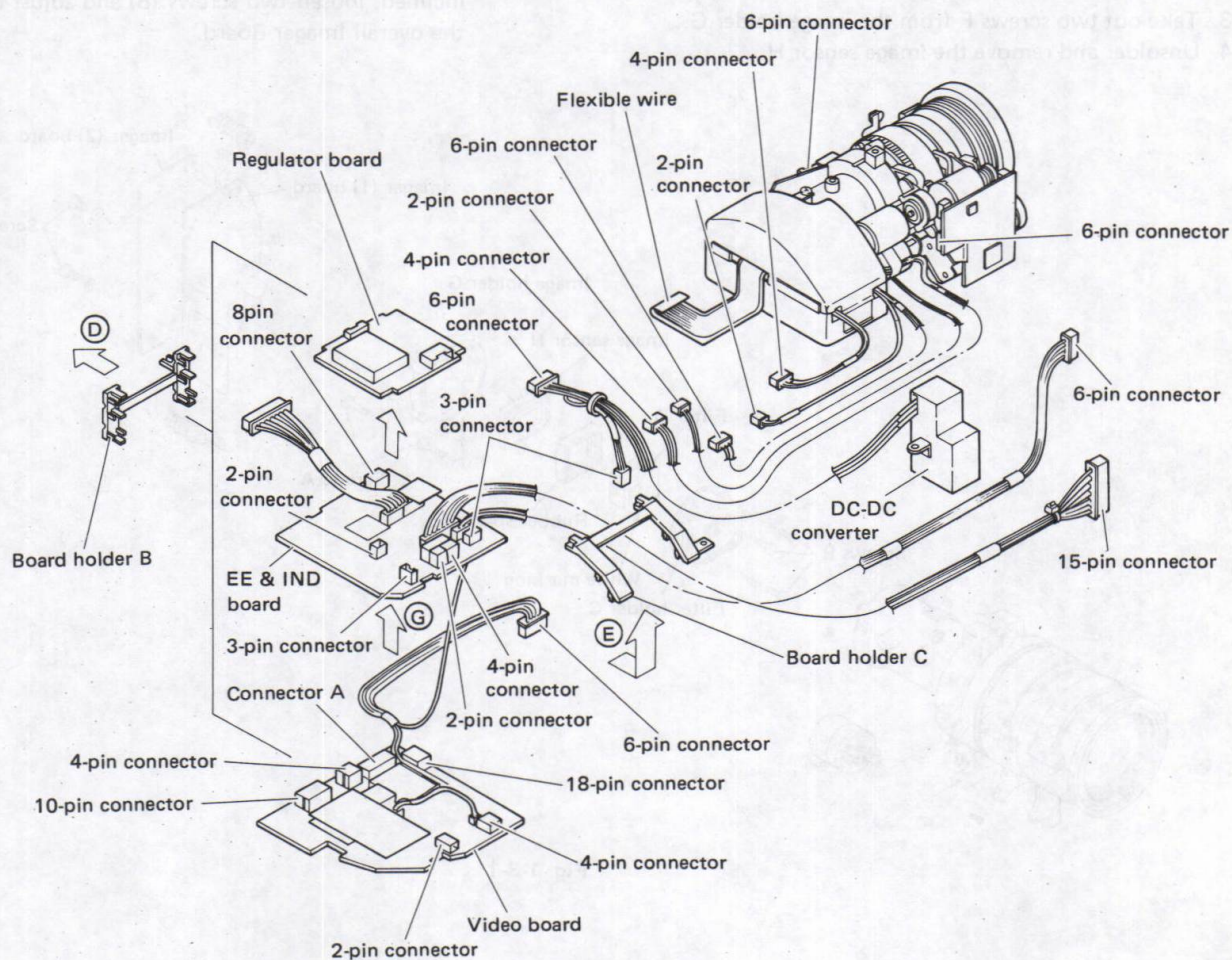


Fig. 1-2-3

1.3 IMAGE SENSOR REPLACEMENT

1.3.1 Precautions

1. The CCD image sensor is subject to electrostatic breakdown in the manner of C-MOS devices, but even more so. Storage, handling and soldering must be performed with the precautions appropriate to such devices.
2. Use care to protect the optical surface of the CCD image sensor from soiling, scratches, fingerprints, etc. If soiled, clean gently with silicon lens tissue, chamois, etc.
3. An orange protector seal is applied to the CCD image sensor before shipment from the maker. Do not remove the seal until immediately before installing the sensor in the optical block.
4. Perform soldering quickly. The optical filter of the CCD image sensor can be discolored by excessive heat.

1.3.2 CCD image sensor removal

1. Refer to Fig. 1-3-1 and take out two screws A. Separate the optical block and the Imager board.
2. Take out three screws B from the filter holder C and remove the filter holder, filter D and rubber spacer E.
3. Take out two screws F from the image holder G.
4. Unsolder and remove the image sensor H.

1.3.3 CCD image sensor installation

1. Remove the protective seal from the CCD image sensor and place it on the imager holder (G). Then atop these, place the rubber spacer, optical filter (D) and filter holder (C). Observe that the CCD image sensor is correctly oriented with respect to the imager holder board. Also check that while marking of the optical filter is positioned at the lower front. Secure the filter holder to the imager holder with three screws (B).
2. While observing proper direction, install the filter holder to the optical block with two screws (A).
3. Very carefully insert the CCD image sensor pins protruding from the imager holder into the holes of the imager board, then secure with two screws (F).
4. Solder the CCD image sensor pins to the imager board. Use care to avoid overheating.

1.3.4 Adjustments

1. Perform back focus adjustment.
2. Electrical adjustment is not necessary.

Note: In event the monitor picture is not centered or is inclined, loosen two screws (8) and adjust by shifting the overall Imager Board.

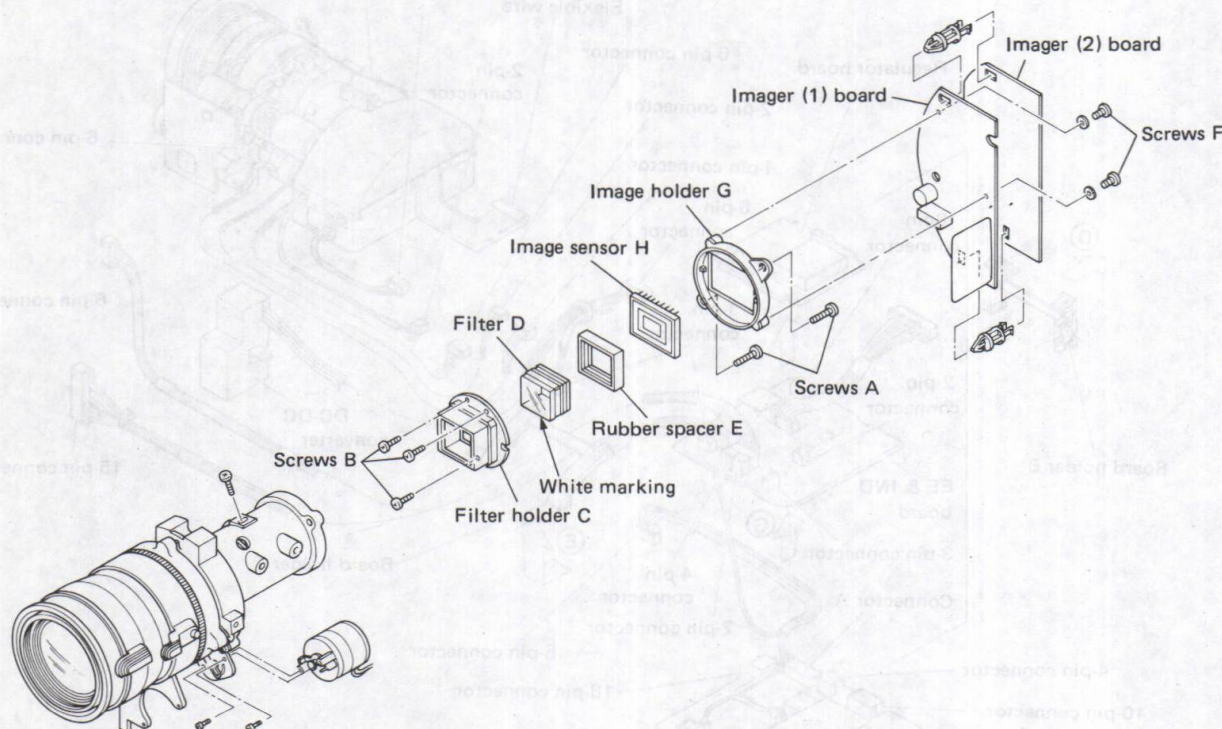


Fig. 1-3-1

1.4 MAIN COMPONENT LOCATIONS

1.4.1 Deck and camera portions (1)

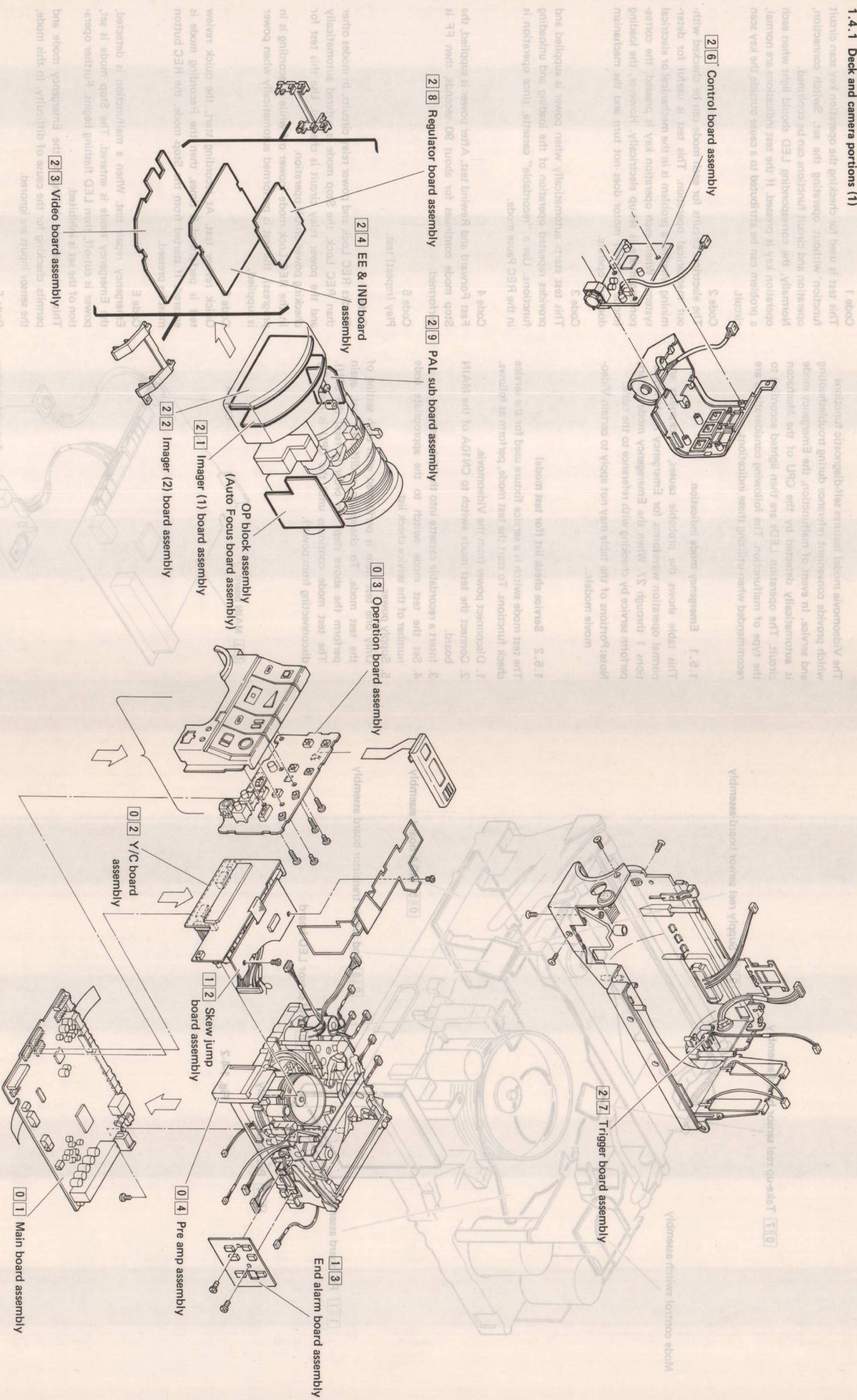


Fig. 1-4-1

1.4.2 Deck and camera portions (2)

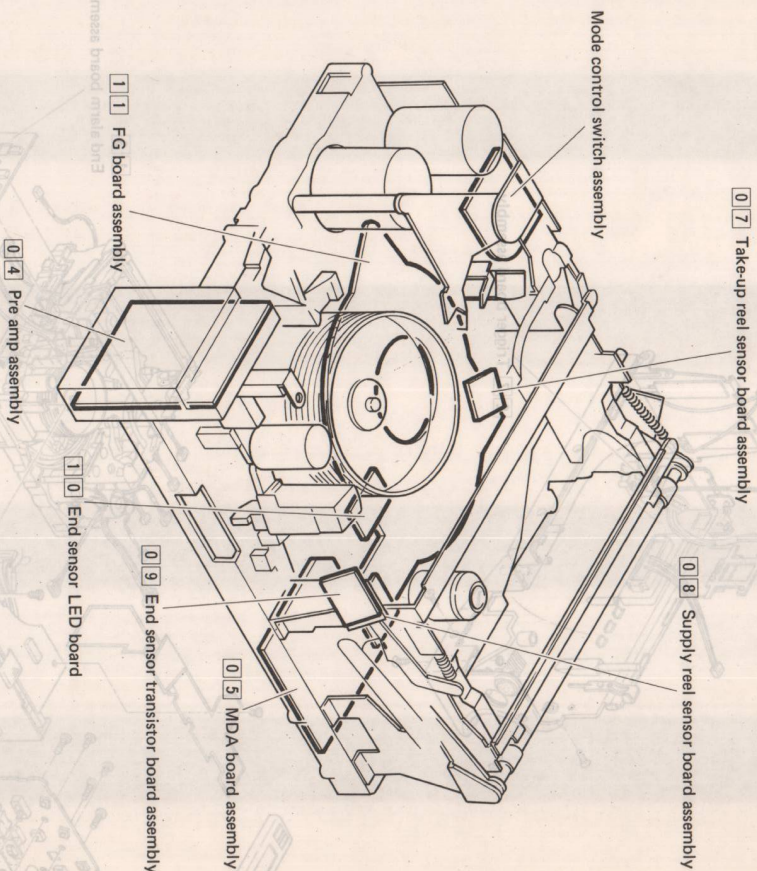


Fig. 1-4-2

1.5 EMERGENCY MODE CHECK LIST

The Videomovie model features self-diagnostic functions which provide convenient reference during troubleshooting and service. In event of malfunction, the Emergency mode is automatically detected by the CPU of the Mechacon circuit. The operation LEDs are then lighted according to the type of malfunction. The following considerations are recommended when utilizing these indications.

1.5.1 Emergency mode indication

This table shows the probable causes, checkpoints and normal operation waveforms for Emergency mode indications 1 through 27. When the Emergency mode occurs, perform service by checking with reference to the table.

Note: Portions of the table may not apply to certain Videomovie models.

1.5.2 Service check list (for test mode)

The test mode switch is a service fixture used for the service check functions. To start the test mode, perform as follows.

1. Disconnect power from the Videomovie.
 2. Connect the test mode switch to CN10A of the MAIN board.
 3. Insert a recordable cassette into the Videomovie.
 4. Set the test mode switch to the appropriate code number of the service check list.
 5. Supply power.
- Only one test item is performed with each setting of the test mode. To change to a different test, again perform the above steps (in order to reset the CPU). The test mode continues until the CPU is reset (by disconnecting from power).

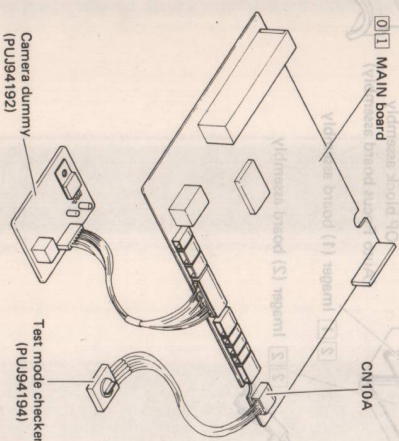


Fig. 1-5-1

1.5.3 Test mode applications

Code 1

This test is used for checking the operation key scan circuit function without operating the set. Switch connection, operation and circuit functions can be confirmed.

Normally, the corresponding LED should light when each operation key is pressed. If the test indications are normal, a problem can be attributed to a cause outside the key scan circuit.

Code 2

The electrical circuits for each mode can be checked without mechanical operation. This test is useful for determining whether a problem is in the mechanical or electrical systems. When each operation key is pressed, the corresponding mode is set-up electrically. However, the loading (mode control) motor does not turn and the mechanism does not operate.

Code 3

This test starts automatically when power is supplied and provides repeated operation of the loading and unloading functions. Use a "recordable" cassette, since operation is in the REC Pause mode.

Code 4

Fast Forward and Rewind test. After power is supplied, the Stop mode continues for about 90 seconds, then FF is performed.

Code 5

Play (repair) test.

Code 7

Checks REC Lock and power relay circuits. In modes other than REC Lock, the Stop mode is entered automatically and the power relay circuit is checked. Use this test for checking power on/off operation.

In the REC Lock mode (power off while a recording is in progress), the test is performed automatically when power is supplied.

Code 8

Quick review test. At recording start, the quick review test is performed 5 times, then the Recording mode is entered. If started from the Stop mode, the REC button must be pressed.

Code E

Emergency repair test. When a malfunction is detected, the Emergency mode is entered. The Stop mode is set, power is cut-off, then LED flashing begins. Further operation of the set is inhibited.

This test prevents shifting to the Emergency mode and permits checking for the cause of difficulty. In this mode, the sensor inputs are ignored.

Code F

Normal program. Allows normal program operation while the test mode switch is connected.

1.6 APPEARANCES AND WIRINGS OF CABLES

• Audio/Video cable assembly

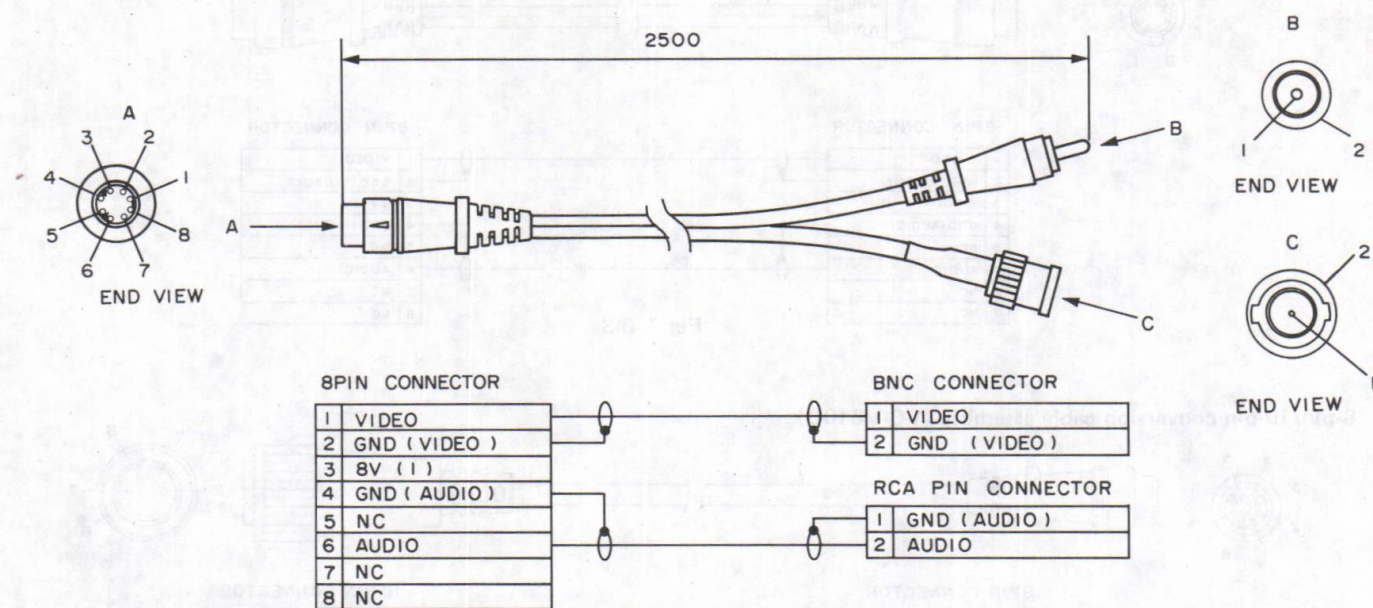


Fig. 1-6-1

• 21-pin/8-pin

Conversion cable assembly

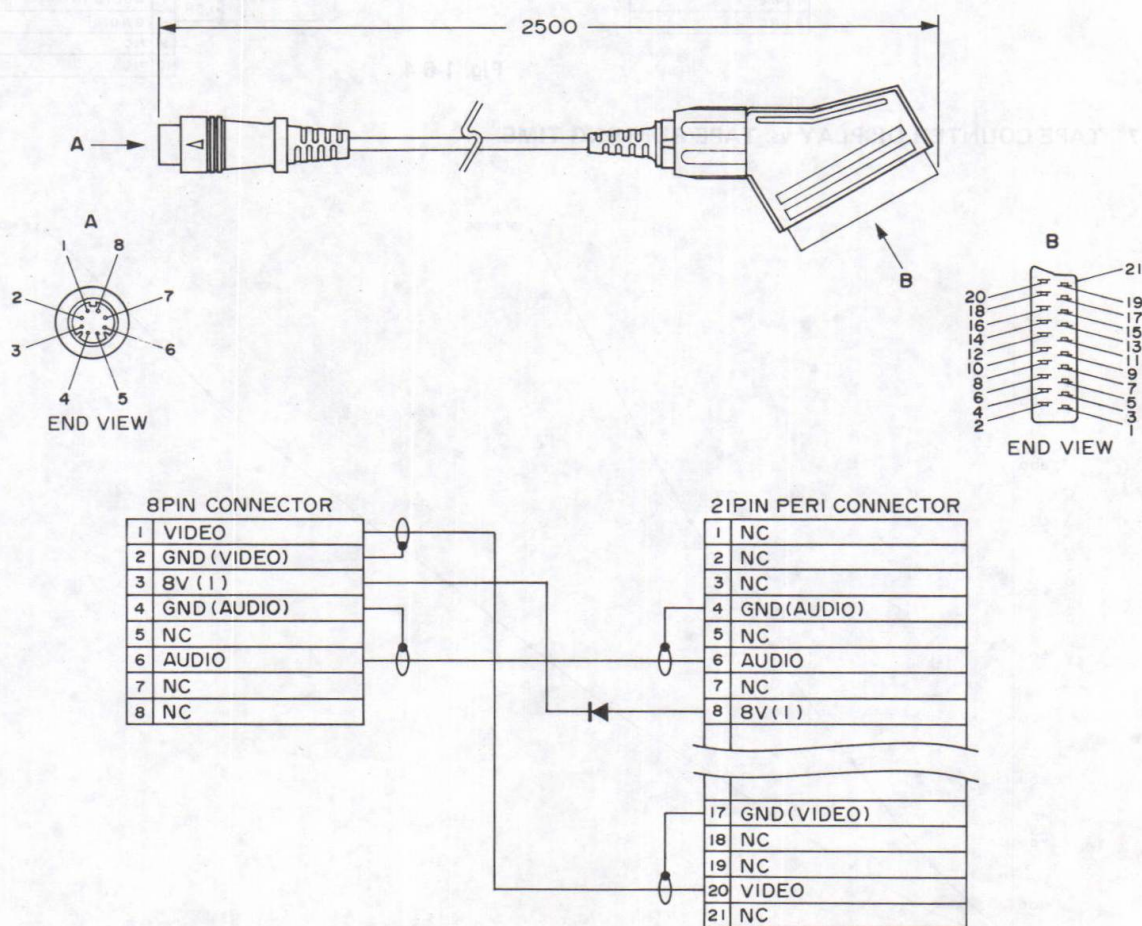


Fig. 1-6-2

● Audio/Video extension cable assembly (VC-P2U)

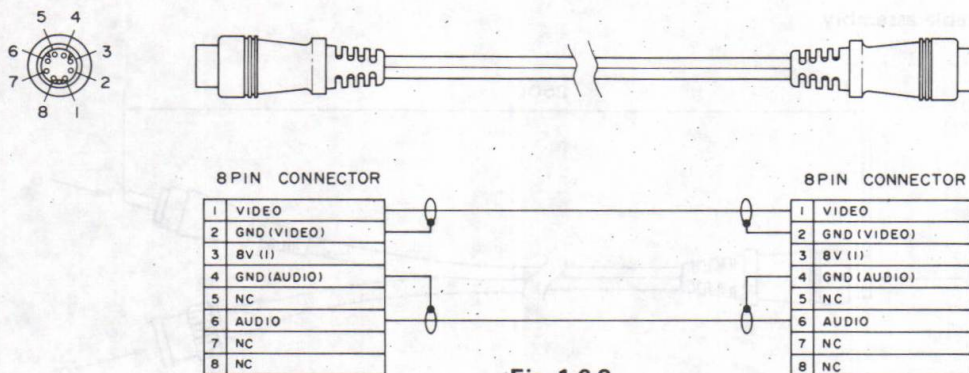


Fig. 1-6-3

● 8-pin/10-pin conversion cable assembly (VC-V810U)

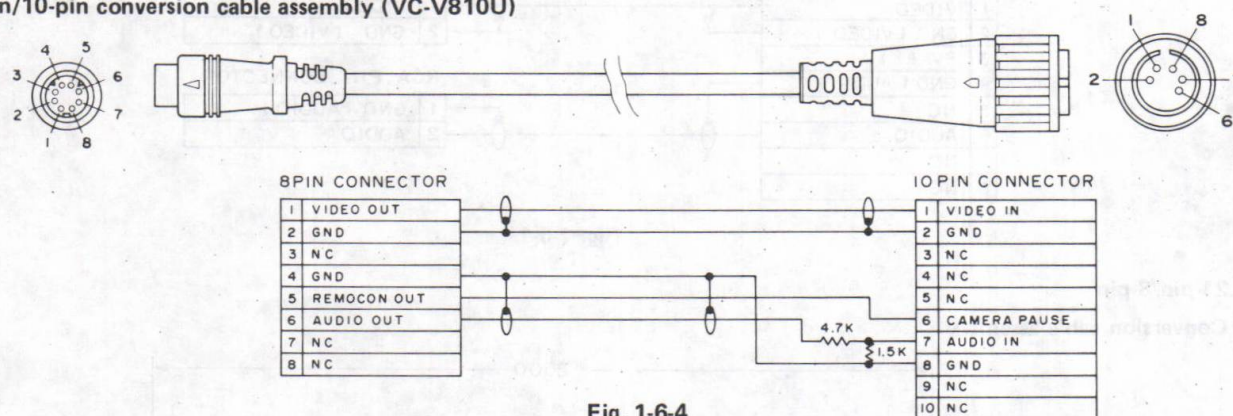


Fig. 1-6-4

1.7 TAPE COUNTER DISPLAY vs. TAPE RUNNING TIME

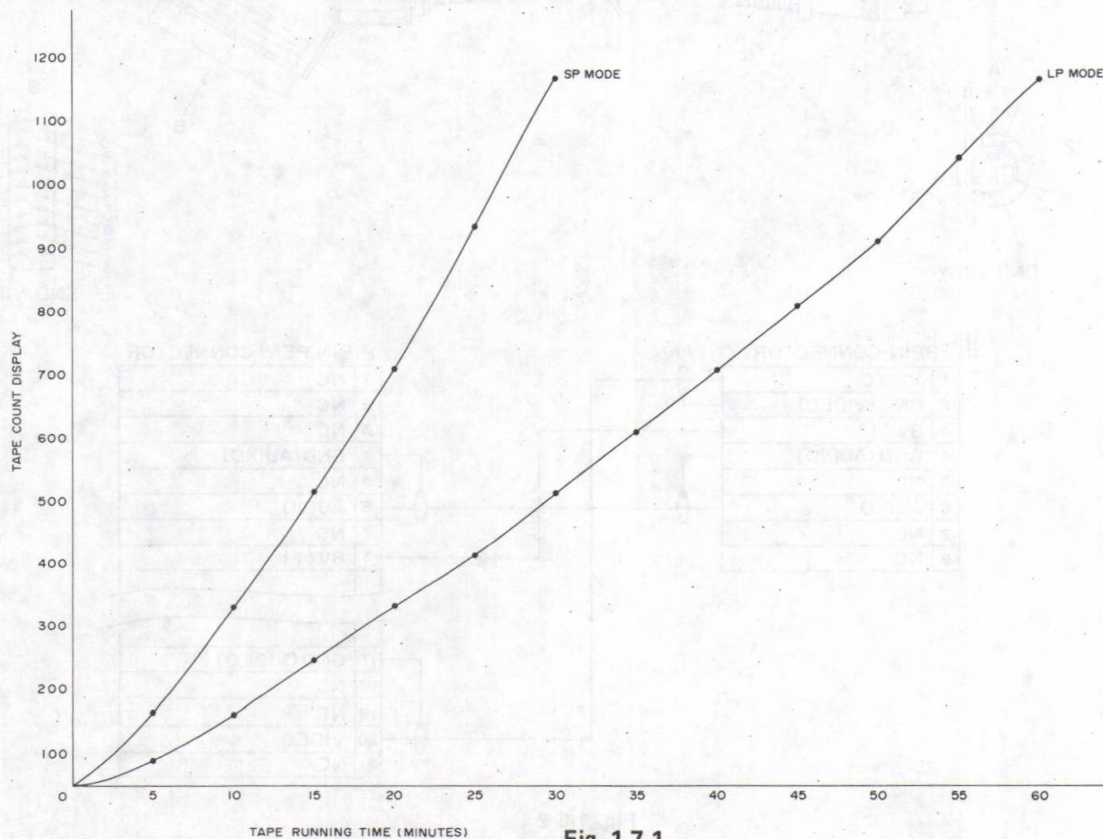


Fig. 1-7-1

SECTION 2 MECHANICAL ADJUSTMENT

2.1 BEFORE PROCEEDING

1. This section describes procedures for replacing mechanical parts which have become defective due to wear or other reason.
2. Perform carefully since mechanical and electrical adjustments are interrelated. In some cases, the mechanical adjustments form the basis for electrical adjustments.
3. To observe the loading operation without using a cassette tape, cover the end sensor with black tape and close the cassette switch contacts. Turn the reel disk by hand in order for loading to proceed (unloading is performed if reel rotation stops).

2.2 SERVICE FIXTURES AND TEST EQUIPMENT

1. Table 2-1 indicates the special service fixtures required for this model.
2. In addition to these, the following tools and test equipment are also required.
 - Properly adjusted color TV monitor
 - Oscilloscope, wideband, dual-trace with delay function
 - Hexagonal (Allen) wrenches, inch sizes (including 0.135 Inch) 0.135 Inch \approx 0.89 mm
 - Spare cassette tape (for recording and running checks)
 - Precision (jewelers) screwdrivers
 Also refer to the section on Electrical Adjustments.

Note: Adjusting jigs and equipment for electrical adjustment, refer to the section.

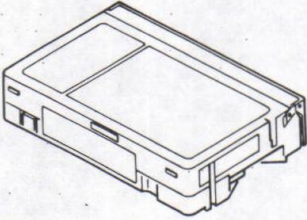
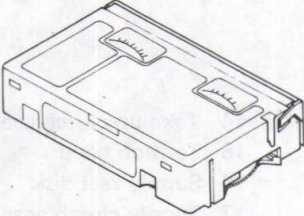
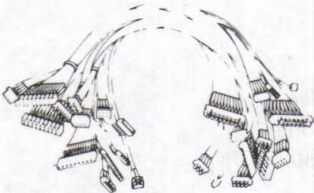
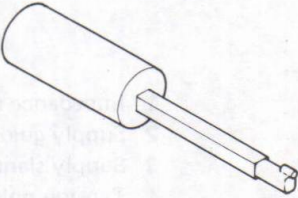
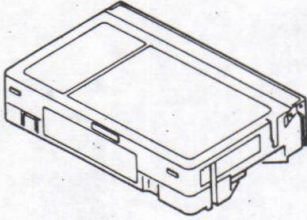
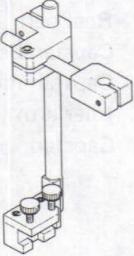
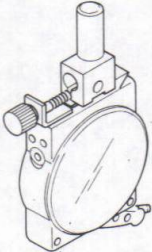
Alignment tape MH-C2	Cassette torque meter PUJ50431-2	Patch cord PUJ93991	A/CTL head position tool PUJ94196
			
Check tape CH-C5L	Micro checker stand PUJ94195	Micro meter PUJ96016	
			

Table 2-1 Jigs and adjusting equipment

2.3 MAIN PARTS LOCATIONS

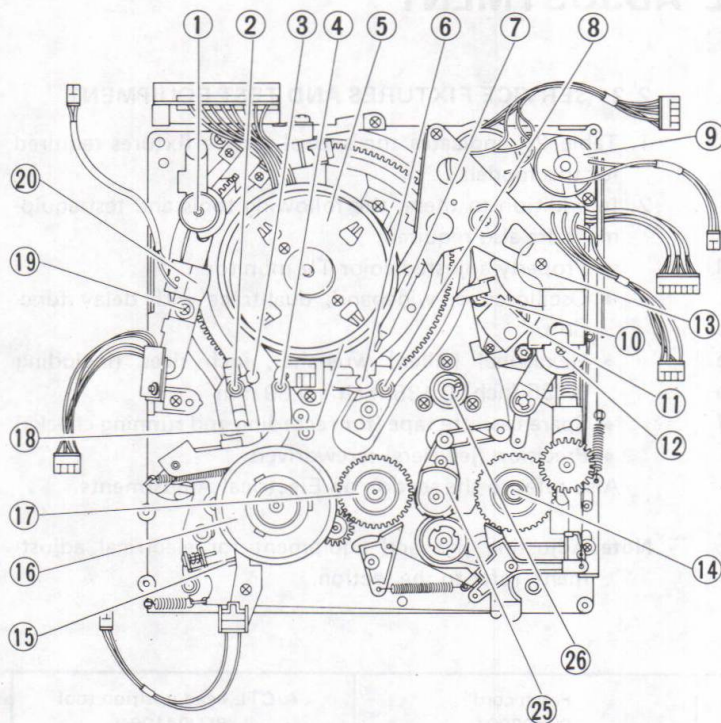


Fig. 2-1-1 Top view

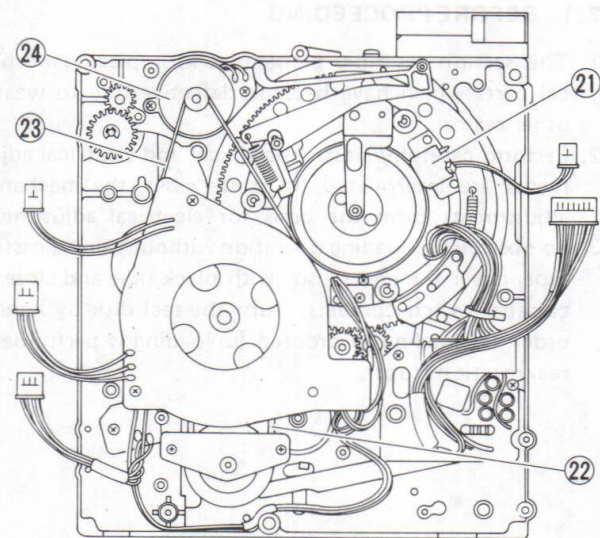


Fig. 2-1-2 Bottom view

- 1 Impedance roller
- 2 Supply guide roller
- 3 Supply slant pole
- 4 Tension pole
- 5 Upper drum
- 6 Take-up slant pole
- 7 Middle pole
- 8 Take up guide roller
- 9 Mode control motor
- 10 Take-up guide pole (2)
- 11 A/CTL head
- 12 Pinch roller
- 13 Cam switch

- 14 Take up clutch gear
- 15 Tension band
- 16 Supply reel disk
- 17 Supply clutch gear
- 18 Lower drum
- 19 Supply guide pole
- 20 Full erase head
- 21 Pick up head
- 22 Reel belt
- 23 Capstan belt
- 24 Capstan motor
- 25 Idler arm
- 26 Capstan

2.4 MAIN ASSEMBLY REPLACEMENTS

As required for replacing parts, remove the external covers, circuit boards, shield plates and cassette housing.

2.4.1 Cassette housing

1. Take out 4 screws that secure the cassette housing to the deck and replace the housing. After replacing, carefully and repeatedly observe the basic transport operations, including cassette insertion and removal, Fast Forward and Rewind. Confirm absence of unusual noise or damage to the tape.

2.4.2 Reel disk

1. Remove the slit washer and the reel disk. Note the washer at the bottom of the disk.
2. Clean the reel shaft with alcohol, then apply a small amount of light oil.
3. Replace the reel disk and confirm back tension (section 2.5.5).

2.4.3 Tension band

1. Remove the reel disk.
2. While using care in regard to the compressed spring, remove one screw and one washer.
3. Disengage the spring from the deck and replace the tension band.
4. Assemble the new tension band and reel disk.
5. Perform tension pole position adjustment and back tension check (section 2.5.5).

2.4.4 Capstan motor

1. After replacing the capstan motor, perform capstan servo sampling position adjustments.

2.4.5 Drum assembly

The upper drum, lower drum and preamp assembly of this model are matched at the time of production. Therefore, replace these as a complete assembly (the preamp is pre-adjusted with respect to the heads).

If replacing only the upper drum is unavoidable, perform the following.

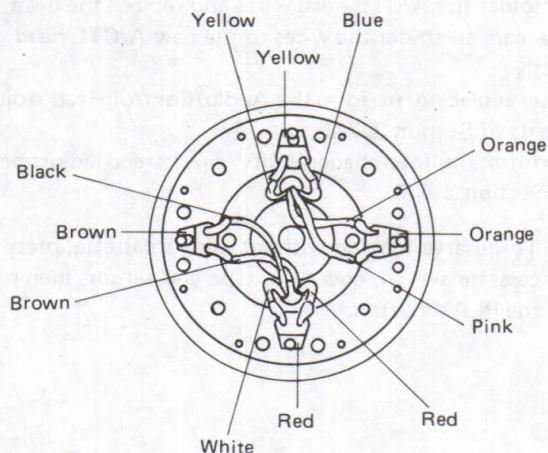


Fig. 2-2

1. Unsolder the lead wires of the upper drum relay pins. Take out 2 screws and remove the upper drum in the upper direction.
2. Install the new upper drum while using care not to touch the head tips or scratch the drum.
3. After replacing, refer to Section 2.6 and perform checks and adjustments of the tape transport, servo circuit, recording and play-back color level, and FM recording level.

Also perform preamp adjustment.

Note: Perform recording and play-back in the LP mode. If picture jitter is severe, loosen the drum screws and reinstall it. Then tighten the screws.

2.4.6 A/CTL head

1. Without a cassette tape, perform loading. Cut the power just at the point the loading operation is complete.
2. Disconnect connector CN13 of the MAIN board (servo section).
3. Take out the 3 screws securing the A/CTL head. Remove the head together with the head spring.
4. Unsolder the A/CTL head wires and replace the head.
5. Use care to solder the wires to the new A/CTL head correctly.
6. After replacing, perform the Audio/Control Head Adjustments of Section 2.7.2.
7. Perform the interchangeability checks and adjustments of Section 2.7.3.

Note: To observe loading without using a cassette, press the cassette switch, cover the tape end sensor, then press the PLAY button.

2.4.7 Full erase head

1. The full erase head is replaced without removing the supply guide pole.
2. Remove the slit washer and the spring, then remove the roller arm in the upward direction.
3. Gently press the erase head arm in the outward direction and remove the screw from the rear of the deck. Then remove the full erase head from the erase head arm and replace.
4. Install the new full erase head in the proper position. Use a spare cassette tape and observe the tape running in the area of the supply guide pole.
5. If tape curling or wrinkling occurs, perform supply guide pole height and interchangeability adjustments (sections 2.6.1 and 2.7.1).

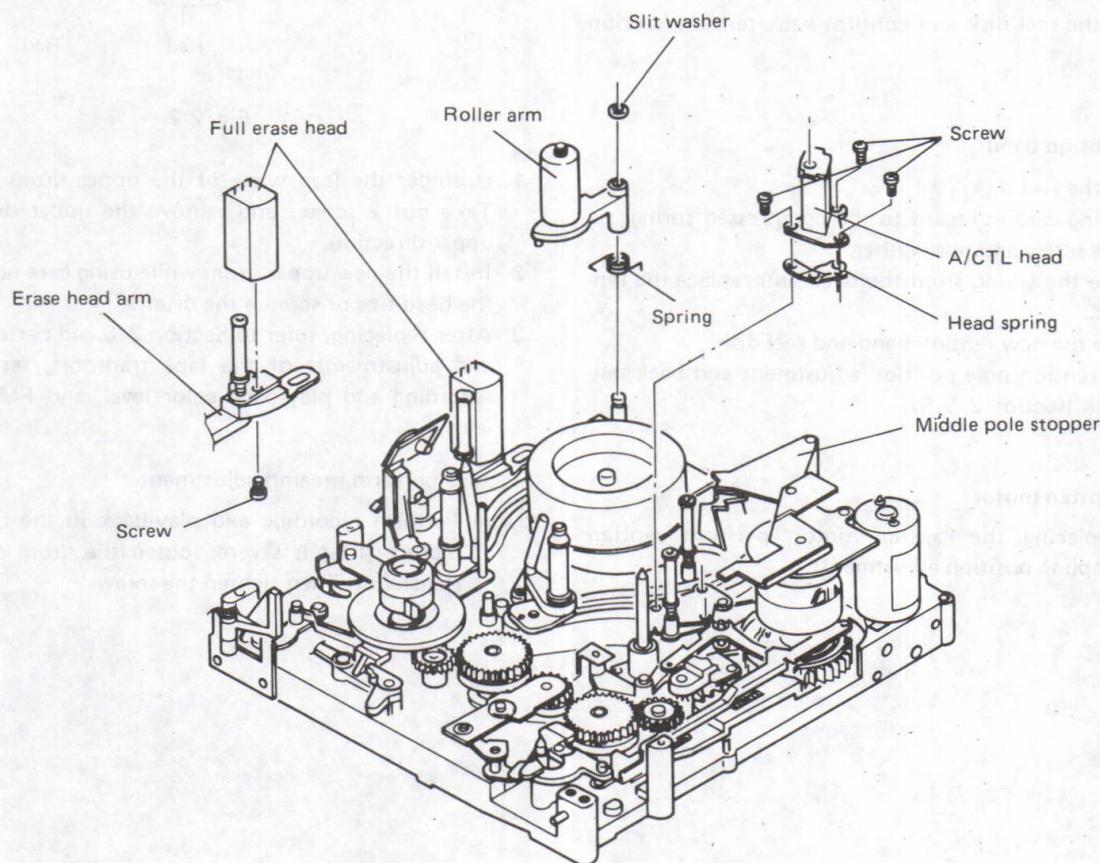


Fig. 2-3 A/CTL head and full erase head

2.5 CHECKS AND ADJUSTMENTS

After reassembling the following parts, be sure to confirm their positional relationships.

2.5.1 Mode control switch

1. In the Stop mode, confirm that the mode control switch appears as indicated in Fig. 2-4.

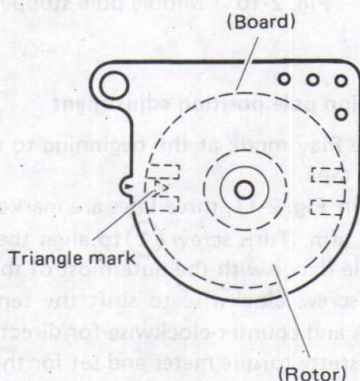


Fig. 2-4 Mode control switch

2.5.2 Pinch roller arm

1. In the Stop mode, confirm the relative positions, particularly the engagement of the gear teeth, of the pinch roller arm and pinch roller bar as indicated in Fig. 2-5.

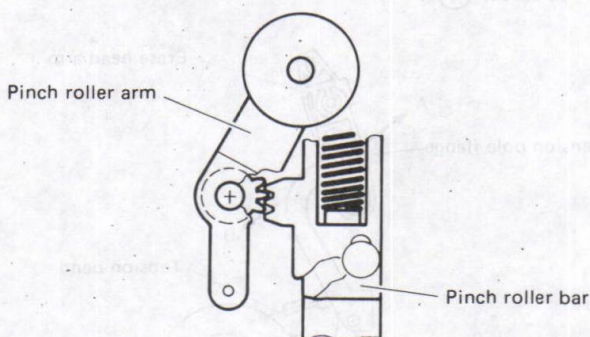


Fig. 2-5 Pinch roller arm

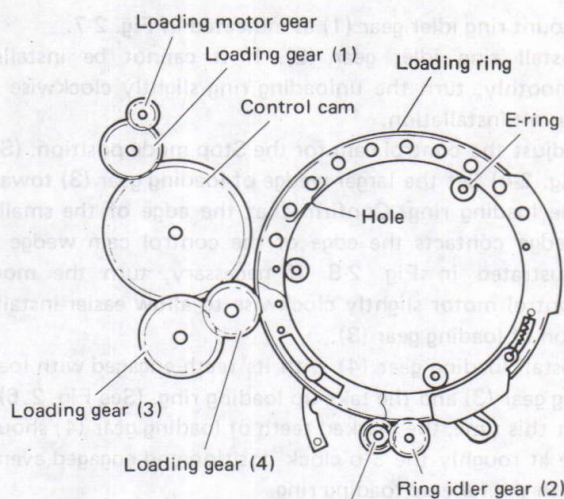


Fig. 2-6 Loading gear (3)

2.5.3 Loading gear and loading ring assemblies

Set to the mechanical Stop mode before removing or replacing the loading gear and loading ring assemblies.

1. Turn the take-up and supply loading rings in the unloading direction so that the 2nd and 3rd holes and teeth of the take-up and supply loading rings overlap each other. Use care not to apply excessive force.
2. Install the rings in this configuration. At this time, it may be easier to secure one of the three E-rings completely first (see Fig. 2-6).

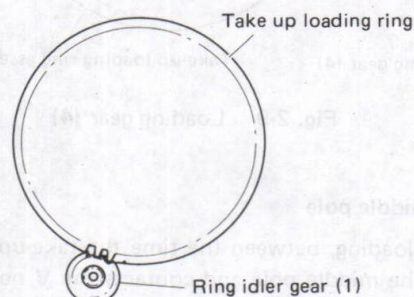


Fig. 2-7 Loading ring

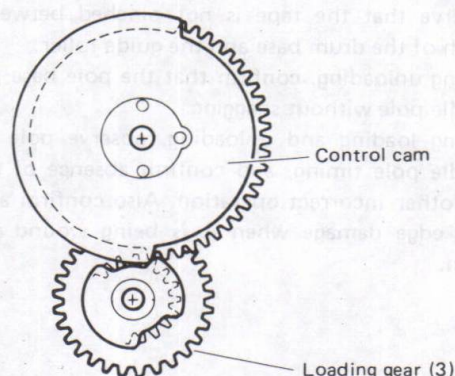


Fig. 2-8 Loading gear (3)

3. Mount ring idler gear (1) as indicated in Fig. 2-7.
4. Install ring idler gear (2). If it cannot be installed smoothly, turn the unloading ring slightly clockwise to permit installation.
5. Adjust the control cam for the Stop mode position. (See Fig. 2-4) Set the larger wedge of loading gear (3) toward the loading ring. Confirm that the edge of the smaller wedge contacts the edge of the control cam wedge as illustrated in Fig. 2-8. If necessary, turn the mode control motor slightly clockwise to allow easier installation of loading gear (3).
6. Install loading gear (4) with its teeth engaged with loading gear (3) and the take-up loading ring. (See Fig. 2.6) At this time, the marked teeth of loading gear (4) should be at roughly the 3 o'clock position and engaged evenly with the take-up loading ring.
7. Repeat loading and unloading operations several times. Confirm that the marked teeth of loading gear (4) come to correct position with respect to the loading ring and that mechanical operation is normal.
8. If mechanical operation is incorrect, again perform re-assembly. Use care not to damage loading gear (1).

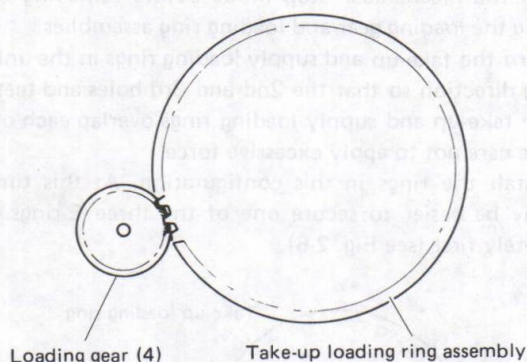


Fig. 2-9 Loading gear (4)

2.5.4 Middle pole

1. During loading, between the time the take-up pole base passes the middle pole and contacts the V notch of the drum base, confirm that the middle pole rests symmetrically in the notch of the middle pole stopper.
2. After completion of loading, operate the tape transport. Observe that the tape is not pinched between the V notch of the drum base and the guide roller.
3. During unloading, confirm that the pole base passes the middle pole without snagging.
4. During loading and unloading, observe pole base and middle pole timing, and confirm absence of tape slack and other incorrect operation. Also confirm absence of tape edge damage when it is being wound about the drum.

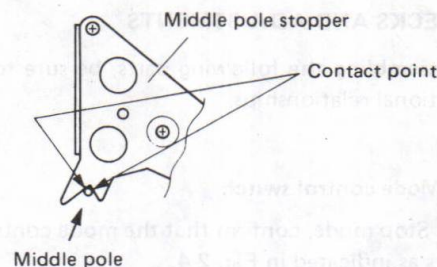


Fig. 2-10 Middle pole stopper

2.5.5 Tension pole position adjustment

1. Set for the Play mode at the beginning to midway portion of the tape.
2. As shown in Fig. 2-11, three lines are marked on the full erase head arm. Turn screw (1) to align the edge of the tension pole flange with the outermost of the three lines. Turn the screw clockwise to shift the tension pole in direction A and counter-clockwise for direction B.
3. Use the cassette torque meter and set for the Play mode. The right gauge of the meter indicates take-up torque and the left gauge shows back tension. Confirm readings of 40 to 75 gf. cm and 15 to 24 gf. cm respectively for the right and left gauges. If outside of specifications, check the tension pole position and if necessary, replace the tension band (section 2.4.3). Severe variation may necessitate replacing the reel disk (section 2.4.2).
4. After adjustment, eject cassette and apply screw sealant to screw (1).

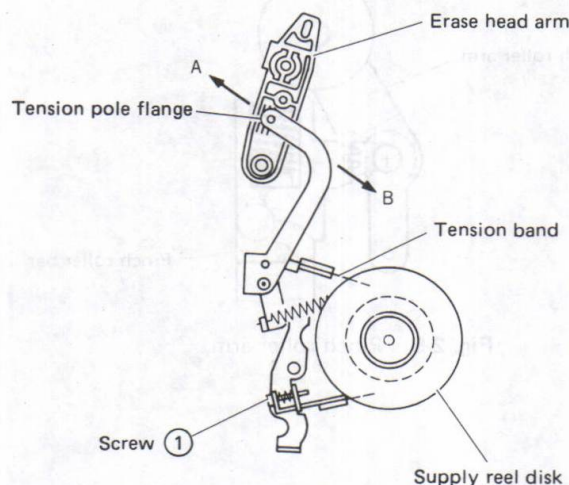


Fig. 2-11 Tension pole

2.6 TAPE TRANSPORT SYSTEM CHECKS AND ADJUSTMENTS

The tape transport system has been precisely aligned at the factory and normally does not require readjustment. The following check is therefore necessary only in cases of severe usage or when replacing parts affecting the tape transport system.

2.6.1 Guide rollers

Guide roller height adjustment is required in order to attain FM waveform linearity at the drum input and output sides during interchangeability adjustments. To adjust guide roller height, loosen the setscrew (0.89 mm hex) and turn the guide roller with a flat blade screwdriver.

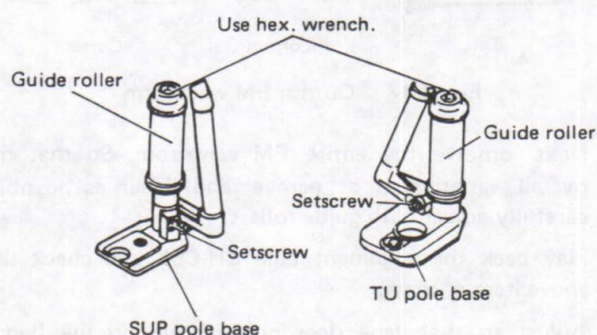


Fig. 2-12 Guide roller

Use a spare cassette (not Alignment tape) and while the tape is running, inspect visually for smooth transport at the drum input side and along the drum lead channel. If necessary, adjust the supply guide roller height.

Inspect the tape transport at the drum output side and if necessary, adjust the take-up guide roller height.

2.6.2 Supply guide pole

This guide pole serves to improve tape transport stability between the cassette output and drum input by maintaining the required height.

After adjusting the supply guide roller, this is adjusted to obtain smooth tape transport at the lower flange of the guide pole.

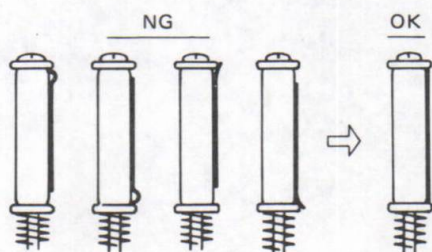


Fig. 2-13 Guide pole

2.6.3 Audio/control head inclination (take-up guide pole)

This is a vital adjustment for interchangeability. After adjusting the take-up guide roller, observe the tape transport at the lower flange of the take-up guide pole. Use a cross-head screwdriver and turn screw (B) counter-clockwise to where wrinkles begin to appear in the tape at the lower flange.

Then gradually turn the screw (B) clockwise to the point where the wrinkles no longer appear.

Azimuth and height of the audio/control head are adjusted during interchangeability adjustments.

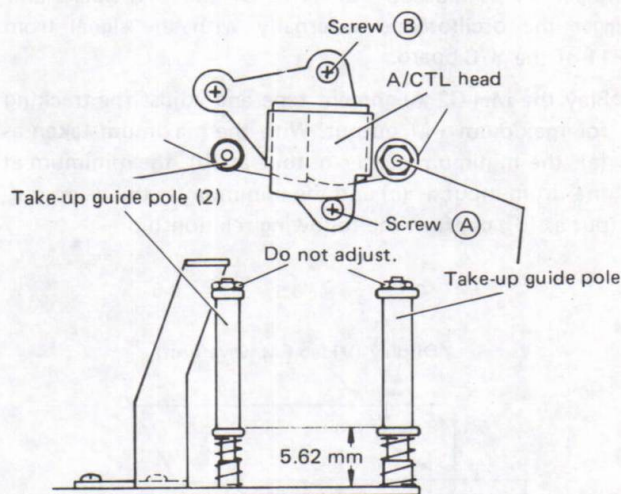


Fig. 2-14 A/CTL head

2.7 INTERCHANGEABILITY CHECKS AND ADJUSTMENT

Before using costly Alignment tape, use a spare cassette and confirm proper tape transport without damage to the tape. If a discrepancy is noted, make sure eliminate the cause of improper tape transport.

2.7.1 FM waveform

The FM waveform checks and adjustments are performed using the stairstep signal of the MH-C2 Alignment tape. Connect an oscilloscope to TP13 of the Y/C board and trigger the oscilloscope externally with the signal from TP11 of the Y/C board.

1. Play the MH-C2 Alignment tape and adjust the tracking for maximum FM output. With the maximum taken as (a), the minimum center output as (b), the minimum at the drum input as (c) and the minimum at the drum output as (d), confirm the following relationship.

$$\frac{b}{a} \geq 0.7 \quad \frac{c}{a} \geq 0.5 \quad \frac{d}{a} \geq 0.5$$

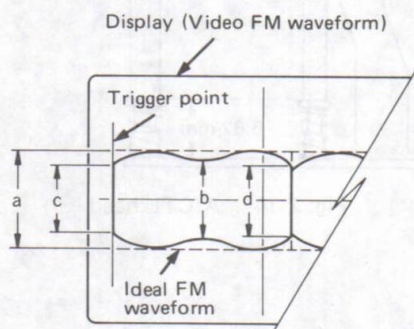


Fig. 2-15 FM waveform

2. Operate the tracking control and vary the FM waveform from maximum to minimum, then from minimum to maximum. Observe the waveform portion corresponding to the drum input and confirm essentially parallel variation. However, if the variation is in a see-saw pattern, the supply guide roller height requires adjustment.

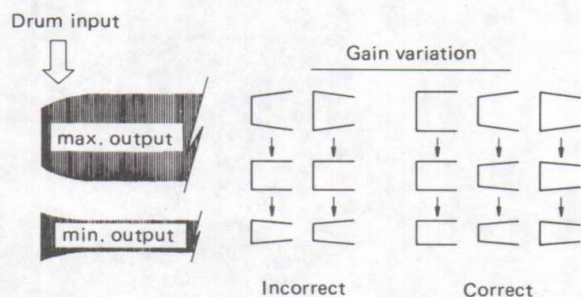


Fig. 2-16 Input FM waveform variation

In other words, the tape is not properly following the drum lead at the drum input side. Adjust the supply guide roller height so that the variation is as parallel as possible.

3. Similarly, observe the FM waveform portion corresponding to the drum output and if necessary, adjust the take-up guide roller height so that the variation is as parallel as possible.

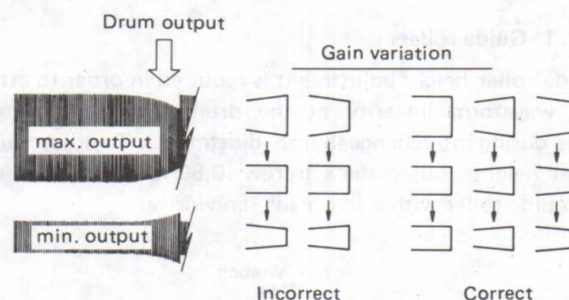


Fig. 2-17 Output FM waveform

4. Next, observe the entire FM waveform. So that the overall variation is as parallel and linear as possible, carefully adjust both guide rollers.
5. Play back the alignment tape CH-C5L and check the above item 4. again.
6. Adjust so that tape does not ride up on the flange during loading, shift from Search REW to Play, and When the tension pole is engaged.
If wrinkles or creases are observed at the take-up guide pole, adjust the audio/control head inclination with attention to the tape transport at the lower flange of the pole.

2.7.2 Audio/control head adjustment

Incorrect position of the audio/control head reduces the play-back audio output, impairs S/N and in severe cases, interferes with servo stability due to inability to pickup the control signal.

Observe the audio signal waveform by connecting an oscilloscope to TP302 of the MAIN board or directly to the audio output terminal.

1. Play the stairstep (audio 6 kHz) section of the MH-C2 Alignment tape.
2. Adjust the azimuth by turning screw (C) for maximum audio output.
3. Adjust the height by turning screws (A), (B) and (C) by small and equal increments (about 45°) at a time for maximum audio output.

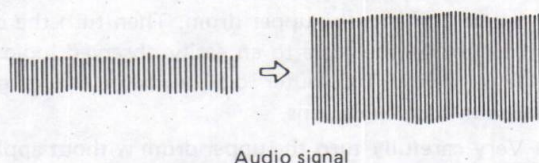
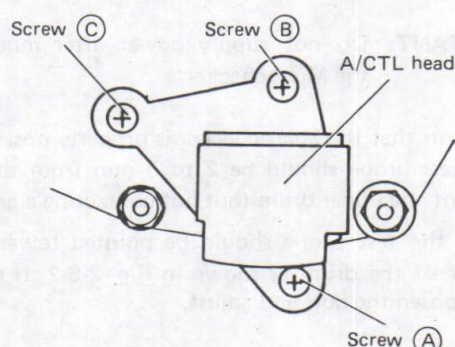


Fig. 2-18 A/CTL head adjustment

4. Again check the FM waveform. If acceptable, carefully tighten the setscrews of the guide rollers. Since this may disturb the FM waveform, check again after tightening the screws.

Note: Precisely adjust 2.7.1 and 2.7.2 (simultaneously).

2.7.3 Control head phase

Perform after adjusting SP/LP control delay MMV and tracking preset. Observe the FM waveform by connecting an oscilloscope to TP13 of the Y/C board. Trigger the oscilloscope externally with the signal from TP11 of the Y/C board and set the slope to minus (–) to observe the CH1 waveform. Set the tracking control to the center click position.

1. Play the stairstep section of the MH-C2 Alignment tape.
2. Slightly loosen screws (D) and (E) of the audio/control head. Place the A/CTL head positioning tool over screw (D) with the pin of the tool inserted in the adjustment hole near the screw.
3. Turn the tool counter-clockwise to position the audio/control head fully toward the capstan side.
4. Gradually turn the tool clockwise while observing the FM waveform. At the first output peak, stop turning and immediately tighten screw (E). Then tighten screw (D).

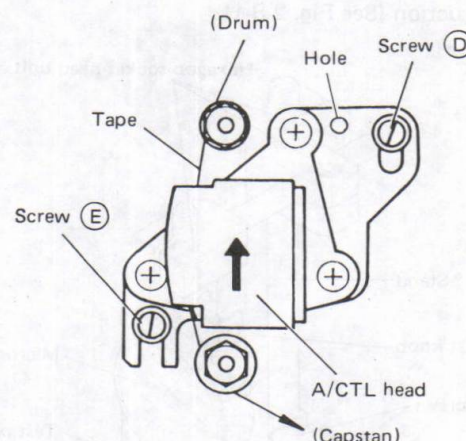


Fig. 2-19 Control head phase

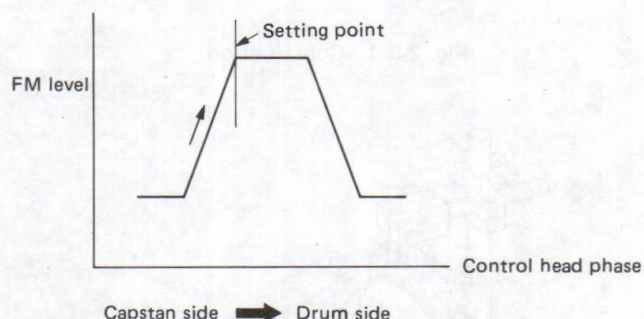


Fig. 2-20 Control head phase

5. Play back the alignment tape CH-C5L, and turning the tracking volume control confirm that FM waveform becomes maximum at the center click position.

2.7.4 Final checks

1. Supply a video or TV signal input, record and play-back. Confirm that the FM waveform conforms to the video FM waveform specifications (SP and LP modes).
2. Refer to Electrical Adjustments and perform overall checks and adjustments of the servo, video and audio circuits.

2.8 MICROCHECKER INSTRUCTIONS

1. The Microchecker is employed for adjusting eccentricity of the upper drum (to within 2 microns).
2. Handling cautions
 - 1) This is a high precision instrument which must not be dropped or subjected to strong shock or vibration.
 - 2) Do not apply strong force to the test probe.
 - 3) The outer dial can be turned in the range of about 7 scale divisions. Do not apply strong force (exceeding 300 gcm) when turning.
3. Construction (See Fig. 2-8-1)

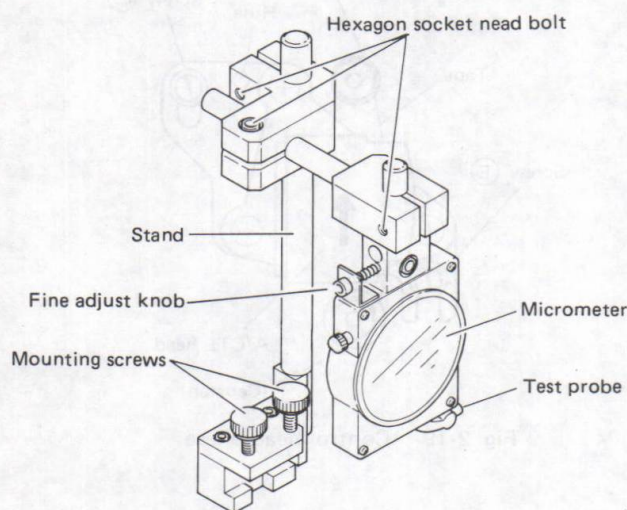


Fig. 2-8-1 Construction

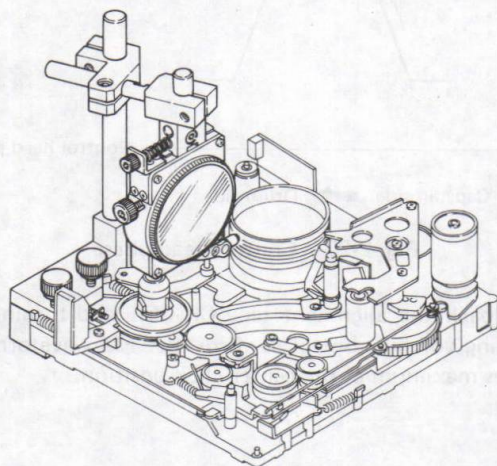


Fig. 2-8-2 Mounting

4. Preparation
 - 1) With the cassette housing in the lowered position, supply power. Press the Play button and carefully observe the pole base movement. Again press the Play button and cut the power at the point the pole base is positioned farthest from the cassette housing (to avoid interference with the Microchecker).
 - 2) Remove the cassette housing and clean the upper drum.
 - 3) Turn the fine adjust knob of the Microchecker counter-clockwise.
 - 4) Unscrew the two mounting screws sufficiently to allow mounting, then attach the Microchecker to the main deck as shown in Fig. 2-8-2. Observe that the bracket is perpendicular to the main deck. Use care that the Microchecker (especially the test probe) does not contact the video heads.

IMPORTANT: Do not supply power after mounting the Microchecker.

- 5) Confirm that the Microchecker is properly positioned. The test probe should be 2 to 5 mm from the top edge of the upper drum (but not contacting a groove). Also, the test probe should be pointed toward the center of the drum as shown in Fig. 2-8-2. If necessary loosen the bolt and adjust.

5. Eccentricity measurement

- 1) Turn the fine adjust knob clockwise to where the probe contacts the upper drum. Then turn the outer dial to set the scale to an easily observed indication (e.g., zero). The outer dial turns in the range of about 7 scale divisions.
- 2) Very carefully turn the upper drum without applying pressure to it (use a non scratching object such as a drinking straw or toothpick to turn the drum). Confirm needle deflection within 2 microns.
- 3) If deflection is greater than 2 microns, the upper drum position must be adjusted.
- 4) Turn the fine adjust knob to separate the test probe from the upper drum. Loosen the 2 securing screws of the upper drum and carefully correct the upper drum position within the screw tolerances. Tighten the securing screws.
- 5) Repeat measurement and adjustment as necessary to where deflection is within 2 microns.

6. Final checks

- 1) Turn the fine adjust knob to separate the test probe from the upper drum, then remove the Microchecker.
- 2) Perform Interchangeability Checks and Adjustments as described in the Service Manual.

Notes:

- 1) PUJ94195 Microchecker Stand
- 2) PUJ96016 Micrometer
- 3) If the PUJ49712-2 Micrometer is available, it can be used with the PUJ94195 Microchecker Stand.

SECTION 3 ELECTRICAL ADJUSTMENTS

3.1 VTR ELECTRICAL ADJUSTMENTS

3.1.1 Precautions

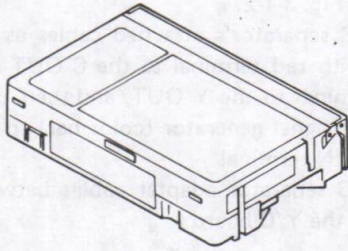
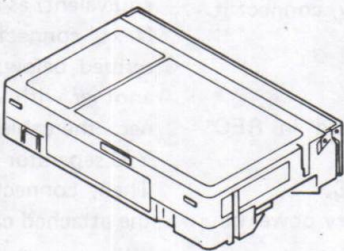
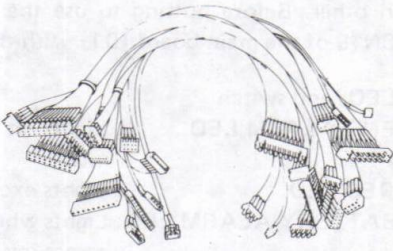
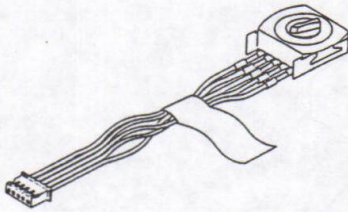
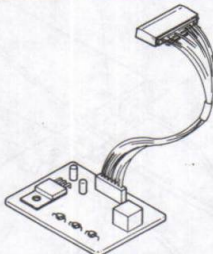
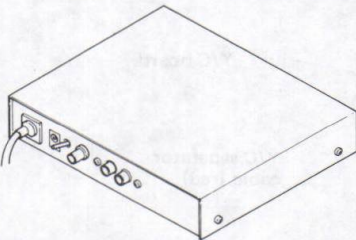
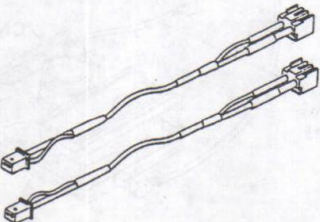
Electrical adjustments are generally necessitated after replacing worn mechanical parts or video heads due to interrelationships among various electrical circuits.

In the event of malfunction, it is important to perform electrical system checks and adjustments methodically with the aid of proper test instruments.

During field service without a complete range of test equipment, avoid unnecessary disturbance of the internal control settings. Refer such repairs and adjustments to an authorized service center, or leave it to do servicing (factory service).

3.1.2 Required test equipment

1. Color monitor-TV
2. Oscilloscope
3. Signal generator (color bar and stairstep)
4. Frequency counter
5. Audio tester
6. Regulated DC power supply
7. Digital voltmeter
8. Blank video cassette tape (EC-30) for recording and playback checks
9. Alignment tape (MH-C2)
10. LP mode check tape (CH-C5L)
11. Patch cord (PUJ93991B)
12. Camera dummy (PUJ94192)
13. Test Mode checker (PUJ94194)
14. Standard electrical/electronic service tools

Alignment Tape (SP MODE) MH-C2	Check Tape (LP MODE) CH-C5L	Patch Cord PUJ93991B
		
Test Mode Checker PUJ94194	Camera Dummy PUJ94192	
		
Y/C Separator PUJ25579-2	Y/C Separator Cable PUJ94193	
		

• This fixture is not absolutely required for this model.

Table 3-1

3.1.3 Camera dummy

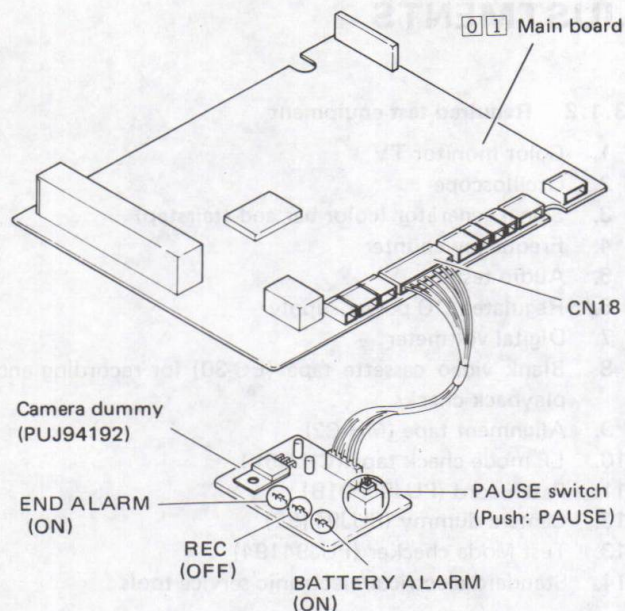


Fig. 3-1-1 Camera dummy connection

The camera dummy (PUJ94192) which is a test equipment for the exclusive use of this model is used when the VTR and camera portions of the VideoMovie are disconnected each other. Before putting to use the dummy, connect it to CN18 of the main board [01] with the cord.

• LEDs and switch

- END ALARM LED : Lights at tape end in REC mode.
- REC LED : Lights except REC.
- BATTERY ALARM LED: Lights when battery power becomes insufficient.

PUAUSE switch

: Pushing this switch with the REC/REC PAUSE switch depressed enters the deck into REC Pause mode.

Note: If the PAUSE switch is not depressed, the PAUSE button of the operation board is ineffective. Therefore, use this dummy with the PAUSE switch depressed except for REC mode.

3.1.4 External video signals (supplied from other implements than GR-C7)

- (1) Since external input terminals are not provided to record an external signal, use the PUJ93991B Patch Cord, which includes the (Y) and (C) video input cables. Supply the video signal directly to Y/C PWB CN1 (Y IN) and CN2 (C IN). Although the E-E (Stop) picture may be disturbed, recording and play-back are not affected.
- (2) Connection of Y/C separator

(Used only for E-E level adjustment according to camera input)

Connect the DC OUT cable of the Y/C separator to the deck section of GR-C7 and supply 9.6 V DC to the Y/C separator's DC IN from the AC power adapter (AA-V2 or equivalent) as shown in Fig. 3-1-2.

Next, connect the Y/C separator's attached cables as described below; cable with red terminal to the C OUT and another with white terminal to the Y OUT, and then, connect the cable from the signal generator (color bar) to the Y/C separator's VIDEO IN terminal.

Then, connect the Y/C separator adapter cables between the attached cables and the Y/C board.

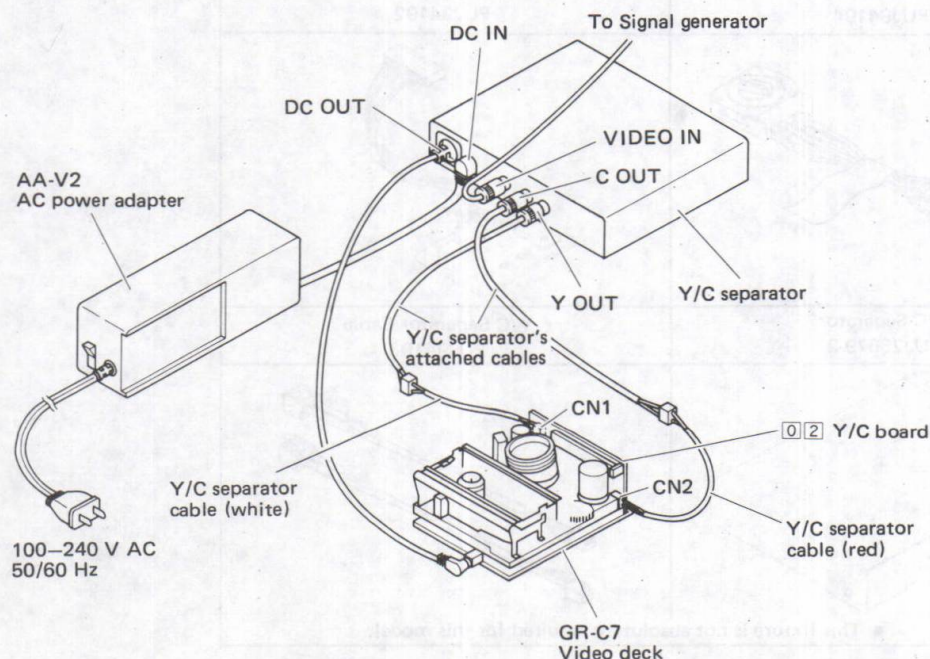


Fig. 3-1-2 Connection of Y/C separator

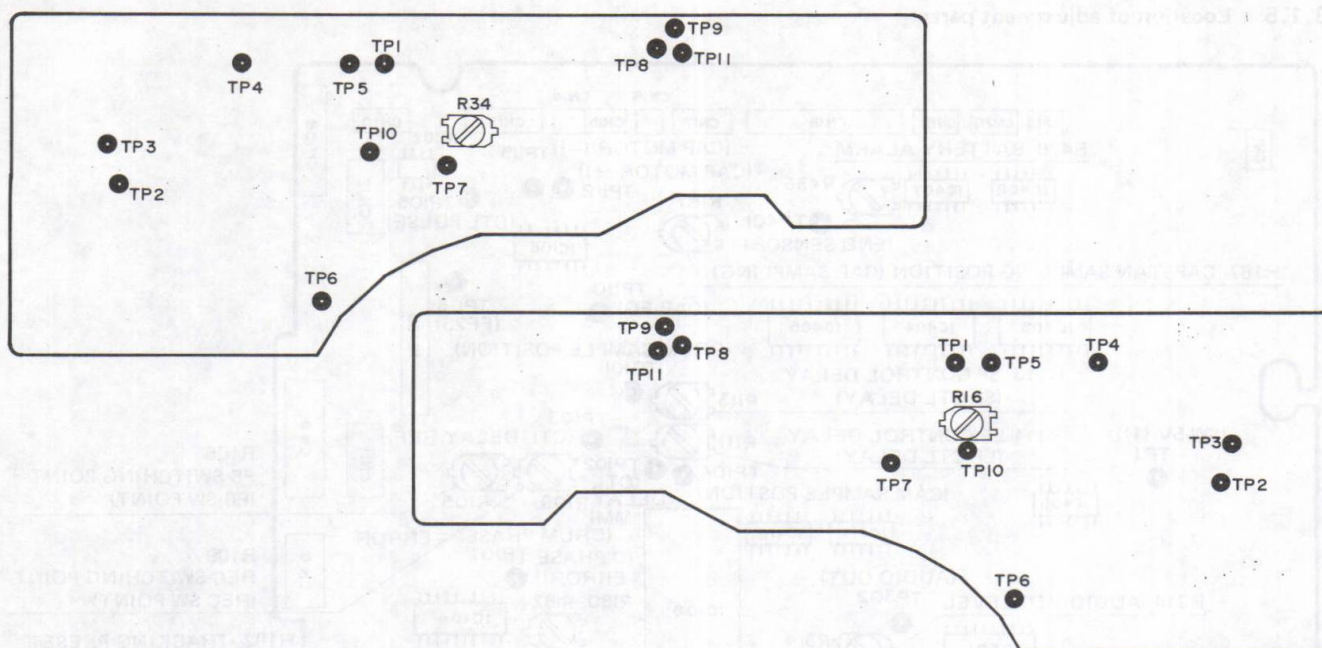


Fig. 3-1-5 1 2 S. Jump board adjustments location

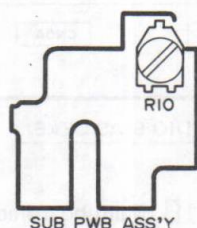


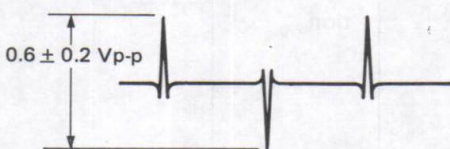
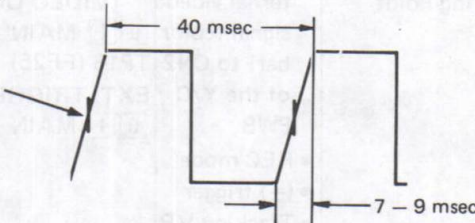
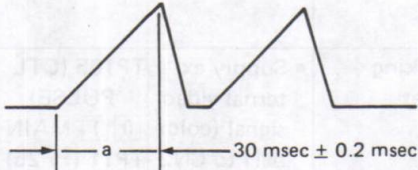
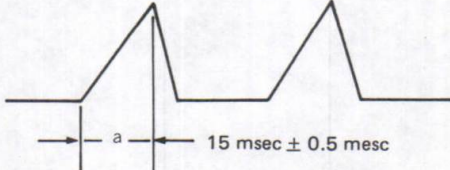
Fig. 3-1-6 SUB board adjustment location

3.2 SWITCHING REGULATOR AND MECHACON CIRCUITS

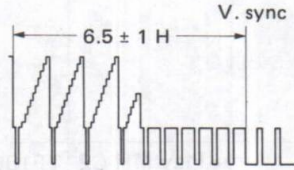
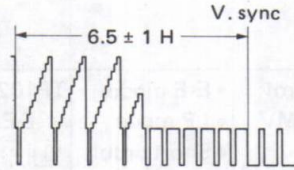
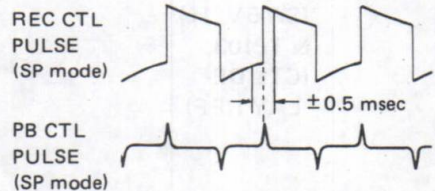
No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
1	Battery Alarm	<ul style="list-style-type: none"> REC mode DC 9.2 V to BATT terminal BATT terminal 	IC404 pin 6 0 1 MAIN Battery alarm indication in LCD counter.	R436 0 1 MAIN	1) In REC mode, supply 9.2 V DC to the BATT terminal. 2) Connect the oscilloscope to pin 6 of IC404 and turn R436 to the position that potential changes from Low to High. (Oscillation is observed at the changing point.) 3) Confirm that the battery alarm display of the tape counter starts blinking.
2	Battery Stop	<ul style="list-style-type: none"> REC mode without input signal 12 V → 8.8 ± 0.1 V at BATT terminal 	Operation check		1) In REC mode, power is turned off when power voltage is varied from 12 V to 8.8 ± 0.1 V.

Note: When not otherwise indicated, perform adjustment in SP mode.

3.3 SERVO CIRCUIT

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
1	Drum Pulse	•REC	TP111 (DRUM PULSE) 0 1 MAIN	R218 0 1 MAIN	<p>1) Connect the oscilloscope to TP111, and adjust R218 so that pulse (Fig. 3-3-1) becomes $0.6 \text{ V} \pm 0.02 \text{ V}_{p-p}$.</p>  <p>Fig. 3-3-1</p>
2	Capstan Sampling Position	•Play MH-C2 •Stairstep	TP106 (CAP. PHASE ERROR) 0 1 MAIN TP104 (CAP. SAMPLE POSITION) 0 1 MAIN	R187 0 1 MAIN	<p>1) Connect the digital voltmeter to TP106, and adjust R187 to obtain $2.45 \text{ V} \pm 0.1 \text{ V}$.</p> <p>2) Connect the oscilloscope to TP104, and confirm a stable sampling pulse positioned nearly at the center of the rising slope of the trapezoidal waveform.</p>  <p>Fig. 3-3-2</p>
3	LP Control Delay MMV	•E-E mode •LP mode •Shortcircuit between TP1 (SW 5V[1]) & TP103 (CTL DELAY REF)	TP102 (CTL DELAY MMV) 0 1 MAIN	R111 0 1 MAIN	<p>1) Short TP1 and TP103.</p> <p>2) Connect the oscilloscope to TP102, and set for LP mode.</p> <p>3) In Stop mode, adjust R111 so that (1) (period between the beginning of rising and the peak of the waveform) becomes 30 msec.</p>  <p>Fig. 3-3-3</p>
4	SP Control Delay MMV	•E-E mode •Shortcircuit between TP1 (SW 5V[1]) & TP103 (CTL DELAY REF)	TP102 (CTL DELAY MMV) 0 1 MAIN	R113 0 1 MAIN	<p>1) Short TP1 and TP103.</p> <p>2) Connect the oscilloscope to TP102, and set for SP mode.</p> <p>3) In Stop mode, adjust R113 so that (a) (period between the beginning of rising and the peak of the waveform) becomes 15 msec.</p>  <p>Fig. 3-3-4</p>

Note: When not using the Y/C Separator for video circuit adjustment, use the camera video signal.

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
5	PB Switching Point	<ul style="list-style-type: none"> • Play MH-C2 • Stairstep • (–) trigger • Tracking VR at center click position 	TP115 (VIDEO OUT) 01 MAIN TP11 (FF25) EXT. TRIGGER 02 Y/C	R105 01 MAIN	<ol style="list-style-type: none"> 1) Connect the oscilloscope to TP115 of 01 MAIN board and trigger it with signal from TP13 in playing back the MH-C2 tape. 2) Set the oscilloscope to trigger externally with minus (–) slope signal. 3) Adjust R105 so that the trigger point becomes 6.5 H prior to the V. sync.  <p>Fig. 3-3-5</p>
6	REC Switching Point	<ul style="list-style-type: none"> • Supply external video signal (color bar) to CN2 of the Y/C PWB. • REC mode • (–) trigger • Tracking VR set at center click position 	TP115 (VIDEO OUT) 01 MAIN TP13 (FF25) EXT. TRIGGER 01 MAIN	R109 01 MAIN	<ol style="list-style-type: none"> 1) With the unit in REC mode, connect the oscilloscope to TP115 and trigger it externally with signal from TP114 of 01 MAIN board. 2) Set the oscilloscope for externally triggering with minus (–) slope signal. 3) Adjust R109 so that the trigger point becomes 6.5 ± 1 H prior to the V. sync.  <p>Fig. 3-3-6</p> <ol style="list-style-type: none"> 4) Playback the recorded portion, and confirm that switching point is 6.5 ± 1 H.
7	Tracking Preset	<ul style="list-style-type: none"> • Supply external video signal (color bar) to CN2 of the Y/C PWB. • Self REC/PB • Tracking VR set at center click position 	TP105 (CTL PULSE) 01 MAIN TP11 (FF25) EXT. TRIGGER 02 Y/C	R182 01 MAIN	<ol style="list-style-type: none"> 1) Connect the oscilloscope to TP105 and TP13 to which it triggers externally, and set the unit to REC mode. 2) Play-back recording of (1). Adjust R182 to align the TP105 waveform rise during Recording with the TP105 positive pulse during Play-back.  <p>Fig. 3-3-7 (a)</p>

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
		<ul style="list-style-type: none"> • LP mode 		<p>①</p> <p>②</p> <p>③</p> <p>④</p> <p>⑤</p> <p>⑥</p> <p>⑦</p> <p>⑧</p> <p>⑨</p> <p>⑩</p> <p>⑪</p> <p>⑫</p> <p>⑬</p> <p>⑭</p> <p>⑮</p> <p>⑯</p> <p>⑰</p> <p>⑱</p> <p>⑲</p> <p>⑳</p> <p>㉑</p> <p>㉒</p> <p>㉓</p> <p>㉔</p> <p>㉕</p> <p>㉖</p> <p>㉗</p> <p>㉘</p> <p>㉙</p> <p>㉚</p> <p>㉛</p> <p>㉜</p> <p>㉝</p> <p>㉞</p> <p>㉟</p> <p>㊱</p> <p>㊲</p> <p>㊳</p> <p>㊴</p> <p>㊵</p> <p>㊶</p> <p>㊷</p> <p>㊸</p> <p>㊹</p> <p>㊺</p> <p>㊻</p> <p>㊼</p> <p>㊽</p> <p>㊾</p> <p>㊿</p>	<p>3) Perform the same procedure as steps 1) and 2) above in LP mode so that the waveform becomes as shown in Fig. 3-3-7(b).</p> <p>REC CTL PULSE (LP mode)</p> <p>PB CTL PULSE (LP mode)</p> <p>± 2 msec</p> <p>Fig. 3-3-7 (b)</p>

3.4 Y/C AND PRE-AMPLIFIER CIRCUITS

Notes:

- Be sure to perform the steps 1 through 4 after replacing the heads and/or the pre-amplifier.
If the drum assembly is replaced, only the checking procedure of the step 1 (fo/Q adjustment) is needed (adjustment is unnecessary).
- Before proceeding to adjustment of the recording system, make sure to perform E-E level adjustment.
- Perform adjustment of the playback system prior to adjusting carrier and deviation.
- Table 3-4-1 shows standard adjustment sequence.
In practice, perform only those steps that become necessary.

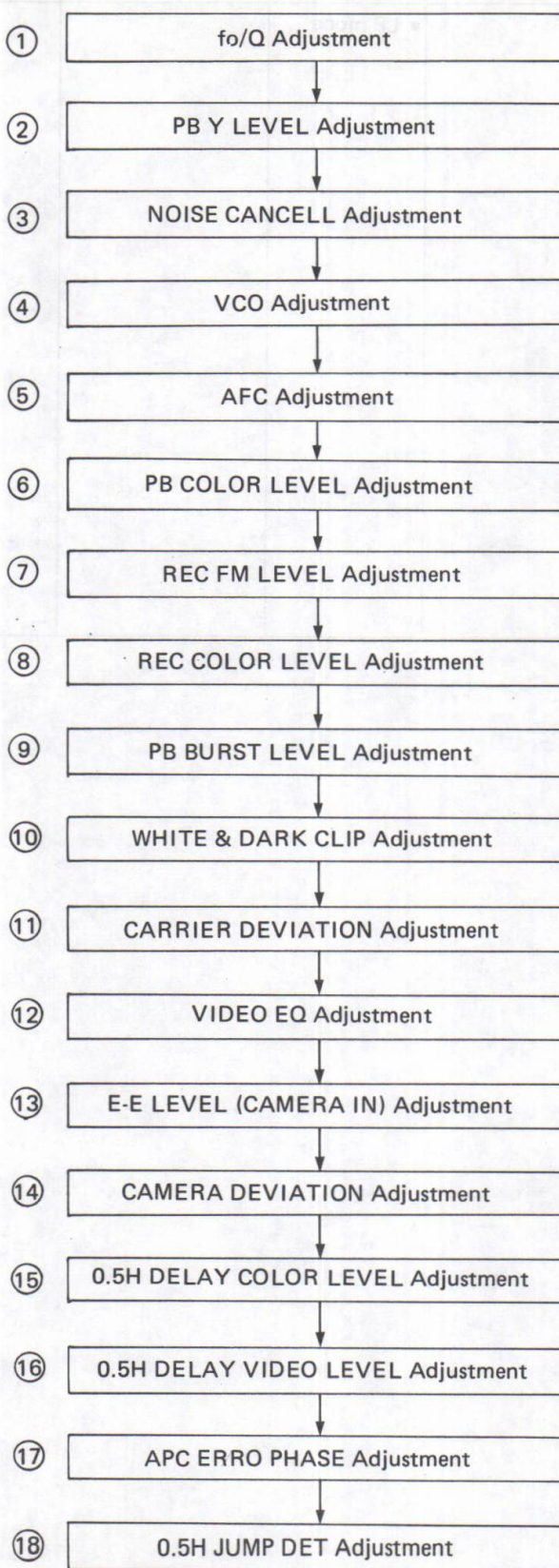
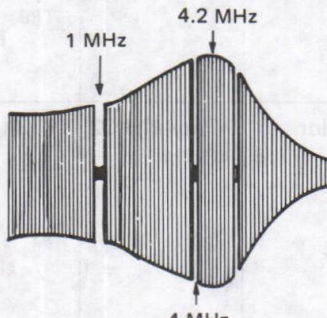
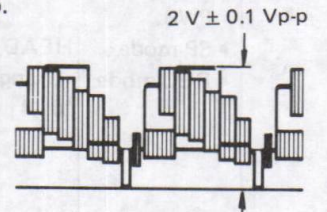



Table 3-4-1 Standard adjustment sequence of the video circuit

[Y/C]

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
1	fo/Q Adj.	<ul style="list-style-type: none"> Perform this adjustment only if image reversal ("tearing") or horizontal jitter occurs during REC/PB of scenes with strong light/dark contrast after replacing the heads or preamp. Play MH-C2 RF sweep 	TP6 (PB FM) 0 2 Y/C	CH-1: C2(fo), R2(Q) CH-2: C4(fo), R4(Q) CH-3: C1(fo), R1(Q) CH-4: C3(fo), R3(Q) 0 3 PRE AMP	1) For more easily observing the waveform, adjust R2 (CH-1 Q) for maximum output in the 4.2 MHz region. 2) Adjust C2 (CH-1 fo) to set the resonance point to 4.2 MHz. 3) At this time, make a note of the 4.2 MHz and 1 MHz ratio (Q value).  Fig. 3-4-2 4) Repeat steps (1) through (3) for CH-2 to CH-4. 5) At the ratio of (3), adjust each fo to that of the least efficient channel.
2	PB Y Level	<ul style="list-style-type: none"> Play MH-C2 Color bar 	TP5 (VIDEO OUT) 0 2 Y/C	R7 0 2 Y/C	1) Connect the oscilloscope to TP5. Adjust R7 so that Y level at TP5 becomes $2\text{ V} \pm 0.1\text{ V}_{\text{p-p}}$.  Fig. 3-4-3
3	Noise Cancel	<ul style="list-style-type: none"> Play MH-C2 Color bar 	TP3 (NOISE CANCEL) 0 2 Y/C	R6 (NOISE CANCEL) 0 2 Y/C	1) Observing the oscilloscope connected to TP3, adjust R6 to minimize the noise level.  Fig. 3-4-4
4	VCO Adj. (4.43 MHz)	<ul style="list-style-type: none"> Play MH-C2 Color bar 	TP8 (VCO) 0 2 Y/C	C59 0 2 Y/C	1) Connect a 30-kohm resistor between TP4 (GND) and TP7 of the Y/C board. 2) Connect the frequency counter to TP8 and adjust C59 to obtain $4.433619\text{ MHz} \pm 50\text{ Hz}$ of the frequency.

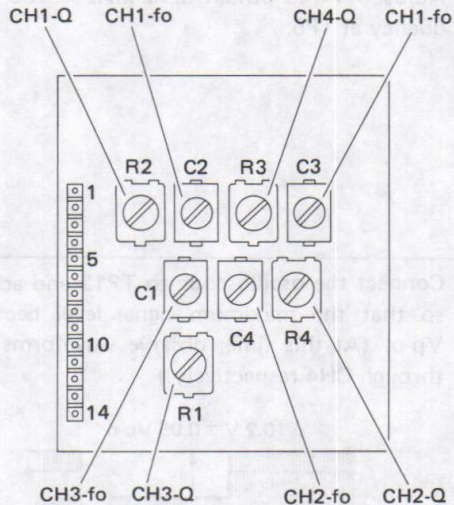
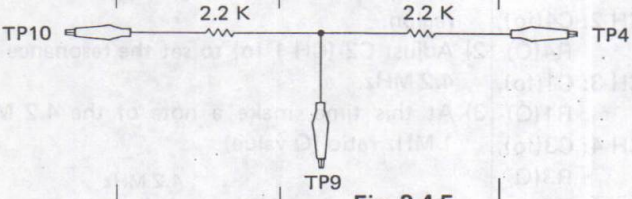
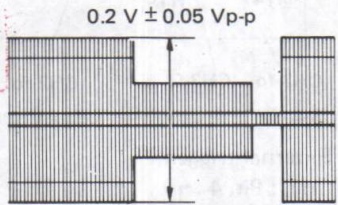
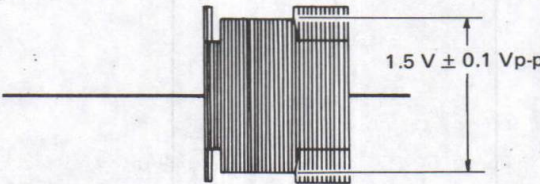
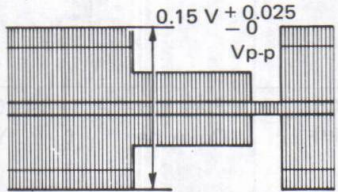


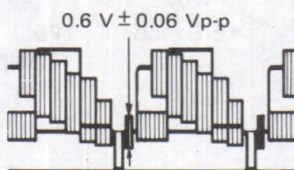
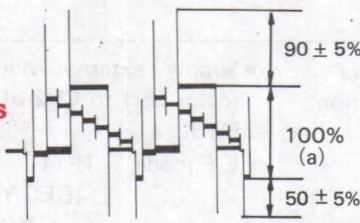
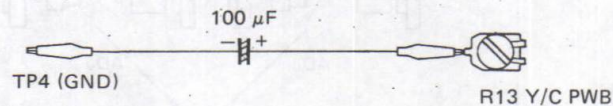
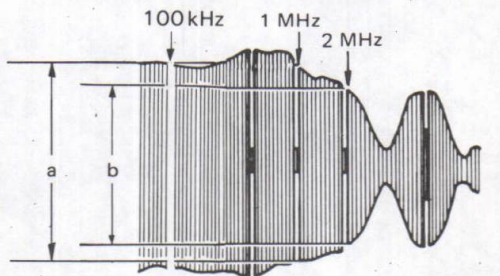
Fig. 3-4-1 Pre-amplifier adjustments location

Note: External trigger

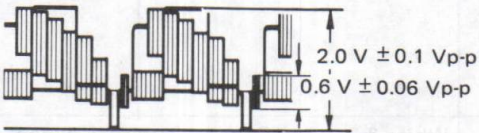
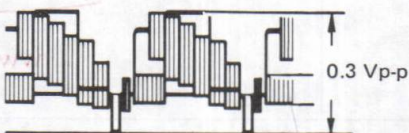
CH1 : Pin 4
 CH2 : Pin 3
 CH3 : Pin 7
 CH4 : Pin 6

of CN-7 in Main Board

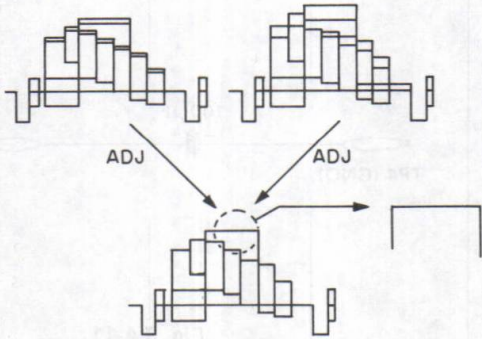
No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
5	AFC	<ul style="list-style-type: none"> • Play MH-C2 • Color bar • 2.5 V DC to TP10 	TP6 (5.15 MHz) 0 2 Y/C	R14 0 2 Y/C	1) Supply regulated 2.5 V DC to TP10 (or connect the test instrument shown in Fig. 3-4-5 to TP4, TP9 and TP10). 2) Connect the frequency counter to TP6. 3) Adjust R14 to obtain 5.15 MHz \pm 100 kHz frequency at TP6.
 <p>Fig. 3-4-5</p>					
6	PB Color Level	<ul style="list-style-type: none"> • Play MH-C2 • Color bar 	TP12 (PB COLOR) 0 2 Y/C	R15 0 2 Y/C	1) Connect the oscilloscope to TP12 and adjust R15 so that the maximum signal level becomes 0.2 Vp-p. (At this time, observe waveforms of CH-1 through CH-4 respectively.)
 <p>Fig. 3-4-6</p>					
7	REC FM Level	<ul style="list-style-type: none"> • Supply external video signal (color bar) to CN2 of the Y/C PWB. • SP mode • REC mode 	HEAD TERMINAL (Orange wire) 0 4 PRE AMP	R1 0 2 Y/C	1) Connect the oscilloscope to the Head terminal and adjust R1 so that the level (a) becomes 1.5 Vp-p.
 <p>Fig. 3-4-7</p>					
8	REC Color Level	<ul style="list-style-type: none"> • Supply external video signal (color bar) to CN2 of the Y/C PWB. • Self REC & PB 	TP12 (PB COLOR) 0 2 Y/C	R12 0 2 Y/C	1) Connect the oscilloscope to TP12. 2) In recording, adjust R12 so that the largest level among CH-1 through CH-4 is 0.15 Vp-p.
 <p>Fig. 3-4-8</p>					

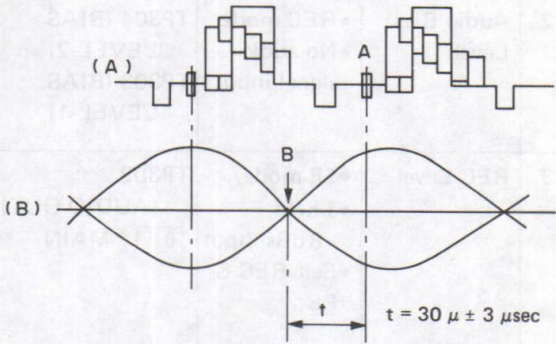
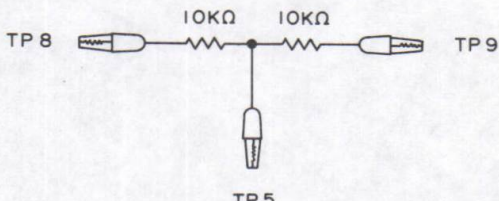
No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
9	PB Burst Level	<ul style="list-style-type: none"> Supply external video signal (color bar) to CN2 of the Y/C PWB. Self REC & PB 	TP5 (VIDEO OUT) 0 2 Y/C	R13 0 2 Y/C	1) Connect the oscilloscope to TP5. Adjust R13 so that burst level at TP5 is 0.6 Vp-p.  Fig. 3-4-9
10	White & Dark Clip	<ul style="list-style-type: none"> Supply external video signal (color bar) to CN2 of the Y/C PWB. E-E mode 	TP2 (EMPHASIS) 0 2 Y/C	R2 (WHITE CLIP) R3 (DARK CLIP) 0 2 Y/C	1) Observing the oscilloscope connected to TP2, adjust R2 and R3 so that white clip becomes 90% and dark clip becomes 50%, respectively.  Fig. 3-4-10
11	Carrier Deviation	<ul style="list-style-type: none"> REC mode No input signal 	TP1 (REC FM) 0 2 Y/C	R4 (CARRIER) 0 2 Y/C R5 (DEVIATION) 0 2 Y/C	1) In recording without input signal, adjust R4 so that frequency at TP1 (counter display) becomes 3.8 MHz ± 50 kHz. 2) Record and play back the color bar signal. Connect the oscilloscope to TP5. 3) During recording, adjust R5 so that the Y level becomes 2 V ± 0.1 Vp-p during playback.
12	VIDEO EQ Adj.	<ul style="list-style-type: none"> Supply external video signal (color sweep) to CN2 of the Y/C PWB. LP mode Self REC & PB 	TP5 (VIDEO OUT) 0 2 Y/C	R10 0 2 Y/C	1) Connect a 100 μF capacitor between TP4 (GND) and R13 the Y/C board to make a shortcircuit shown in Fig. 3-4-11. 2) Set markers of the color sweep generator to 2 MHz and 100 kHz. 3) Record and Play-back a color sweep signal in the LP mode. Adjust R10 so that the 2 MHz level is more than -8 dB relative to 100 kHz.  Fig. 3-4-11  Fig. 3-4-12 LP : $\frac{b}{a} = -8\text{dB}$

[Camera]

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
13	E-E Level (Camera IN)	<ul style="list-style-type: none"> Supply external video signal (color bar) to CN2 of the Y/C PWB. E-E mode 	TP5 (VIDEO OUT) 0 2 Y/C	R9 R11 0 2 Y/C	1) Connect the oscilloscope to TP5. 2) Adjust R9 so that Y level at TP5 becomes 2.0 Vp-p. 3) Adjust R11 to obtain 0.6 Vp-p of burst level at TP5.  Fig. 3-4-13
14	Camera Deviation	<ul style="list-style-type: none"> Supply external video signal (color bar) to CN2 of the Y/C PWB. E-E mode 	TP14 (REC Y) 0 2 Y/C	R8 0 2 Y/C	1) Observing the oscilloscope connected to TP14 adjust R8 so that Y level becomes 0.3 Vp-p.  Fig. 3-4-14

[S. JUMP]

15	0.5H Delay Color level	<ul style="list-style-type: none"> Supply external video signal (color bar) to CN2 of the Y/C PWB. Self REC & PB Color bar 	TP1 (0.5H Delay) 1 2 S. JUMP	R10 1 2 S. JUMP	1) Record and play-back color bar signal (SP mode). 2) Connect oscilloscope to TP1 of the S-JUMP PWB and make a note of level (A). 3) Short TP2 and TP3 to ground. Again observe the level (B) at TP1. 4) Adjust R10 so that levels A and B are equal.
16	0.5 H Delay Video level	<ul style="list-style-type: none"> PLAY CH-C5L Color bar 	TP5 0 2 Y/C	R34 1 2 S. JUMP	1) Connect oscilloscope to TP5 of the Y/C PWB in playing back the CH-C5L tape. 2) Adjust R34 of the S-JUMP PWB to obtain the waveform illustrated in Fig. 3-4-15.  Fig. 3-4-15

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
17	APC Error Phase	<ul style="list-style-type: none"> Supply external video signal (color bar) to CN2 of the Y/C PWB. Self REC & PB 	TP10 TP6 1 2 S. JUMP	L1 1 2 S. JUMP	<p>1) Connect dual trace oscilloscope to TP10 and TP6. Adjust the core of L1 to obtain the burst phase (A) and 7.8 kHz waveform phase (B) indicated in the figure, $t = 30 \mu \pm 3 \mu \text{sec}$.</p>  <p>Fig. 3-4-16</p>
18	0.5 H Jump Det	<ul style="list-style-type: none"> E-E mode No input signal 	TP4 (0.5 H JUMP DET) 1 2 S. JUMP	R16 1 2 S. JUMP	<p>1) Supply regulated 2.5 V DC to TP5 (or connect the test instrument shown in Fig. 3-4-17 to TP8, TP9 and TP5).</p> <p>2) Connect the frequency counter to TP4.</p> <p>3) Adjust R16 to obtain $30 \text{ kHz} \pm 0.2 \text{ kHz}$ frequency at TP4.</p>  <p>Fig. 3-4-17</p>

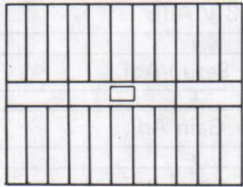
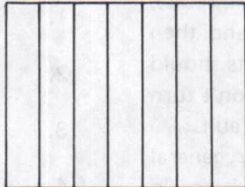
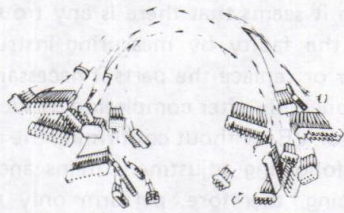
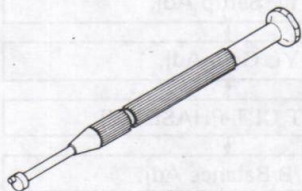
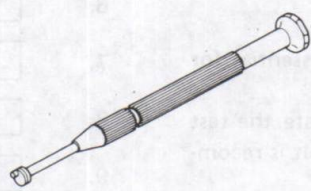

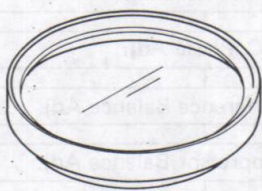
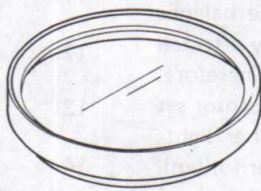
Note: Confirm that the playback mode is fulfilled with CH-C5L after completing all adjustments.

3.5 AUDIO CIRCUIT

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
1	PB Level	<ul style="list-style-type: none"> • Play MH-C2 • Color Bar (1 kHz). • PB mode 	TP302 (AUDIO OUT) 01 MAIN	R322 01 MAIN	1) Connect the audio tester to TP302, and play the alignment tape MH-C2 (1 kHz). In the PB mode, adjust R322 to obtain -6 dBs (1.1 Vp-p) $\pm 0.5 \text{ dBs}$.
2	Audio Bias Level	<ul style="list-style-type: none"> • REC mode • No audio signal input 	TP304 (BIAS LEVEL-2) TP303 (BIAS LEVEL-1)	R344 01 MAIN	1) Connect the audio tester's HOT side to TP303 and GND to TP304. 2) Adjust R344 so that bias level becomes $2.2 \text{ mV} \pm 0.2 \text{ mVrms}$.
3	REC Level	<ul style="list-style-type: none"> • SP mode • 1 kHz, -8 dBs input • Self REC & PB 	TP302 (AUDIO OUT) 01 MAIN	R314 01 MAIN	During Recording, adjust R314 so that the TP302 value is $-6 \pm 1 \text{ dBs}$ during Play-back.

3.6 CAMERA ADJUSTMENT

3.6.1 Required tools and equipment for camera adjustment

Grey scale pattern (GS-2A) Reflection type, 11 steps, $\gamma \approx 2.2$	Color bar pattern (CC-2A) Reflection type, 7 colors	Patch cord (PUJ93991)
		
Back focus adjustment driver (PUJ37186A)	AF (auto-focus) unit, Back focus adjustment driver (PUJ37186B)	AF (auto-focus) unit, Back focus adjustment chart (PUJ93944)
		
Color temperature conversion filter (PUJ53340A - C2, C4, C8)	Neutral density filter (PUJ53341A - ND2, ND4, ND8)	Color compensating filter - CC10Y (CC10Y filter made by Kodak)
		This filter is CC10Y in Kodak.

3.6.2 Other tools and instruments necessary for adjustment

- Halogen lamps (3-200 K each) 2 or more
- 9.6 V DC supply (AA-V2 or equivalent)
- Skin tone test pattern (of clear color phase)

3.6.3 Other measuring instruments

- Oscilloscope
- Vectorscope
- Color video monitor
- Digital voltmeter
- Lux meter
- Color temperature meter

3.6.4 Standard setting and connection

Separate the camera and deck portions each other, and connect them with patch cords.

For adjusting VRs of the E-E & IND board, pull the VIDEO, E-E & IND, and REG boards to this side prior to adjustments. At this time, pay careful attention to flexible wires not to damage them.

For adjusting VRs of the VIDEO board, there needs no pulling the board.

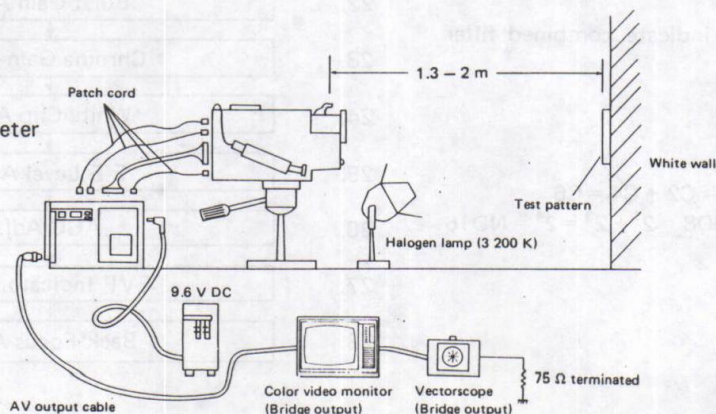


Fig. 3-6-1

3.7 PREPARATION AND PRELIMINARY CHECKS BEFORE CAMERA ADJUSTMENTS

3.7.1 Notice before adjustment

Electrical adjustments described in this article are generally needed in case of electrical parts replacement.

When it seems that there is any trouble in electric circuits, find the faulty by measuring instruments first, and then repair or replace the parts if necessary. Adjustments should be done only after completion of such checking. Don't turn control VRs without confirming the reason of the fault.

The following adjustment items and steps are for general servicing, therefore, perform only the necessary items in practice.

3.7.2 Preparation and check points

1. Test pattern illumination

Proper illumination of the test pattern is essential for performing correct adjustment.

Use 3200°K lights and set them to illuminate the test pattern evenly at approximately 4,000 Lux. (It is recommended to use two or more lamps.)

2. Test pattern

Use the new and clean test patterns.

3. This model adopts the fully automatic color temperature sensing system. Any adjustment such as white balance adjustment relating to the system is remarkably effected by ray and light applied to the color sensor. Therefore, such adjustment must be done with the color sensor set to the enclosure. Pay careful attention to other lights (fluorescent light, etc.) than the proper pattern illumination.

4. It needs not to adjust VRs of the Imager board (1) and (2).

5. When not otherwise indicated, perform adjustment in the manual focus and indoor mode.

6. Although the adjustment method assumes that a vector-scope is not available, perform adjustment as finely as possible.

7. Light amount should be reduced by ND filters. However, if the level cannot be obtained, adjust R61 (IRIS) of the [2][4] EE & IND board.

8. If TP1 level cannot be obtained by ND filters, adjust R61 (IRIS) of the [2][4] EE & IND board.

Add digit after the hyphens to indicate combined filter value.

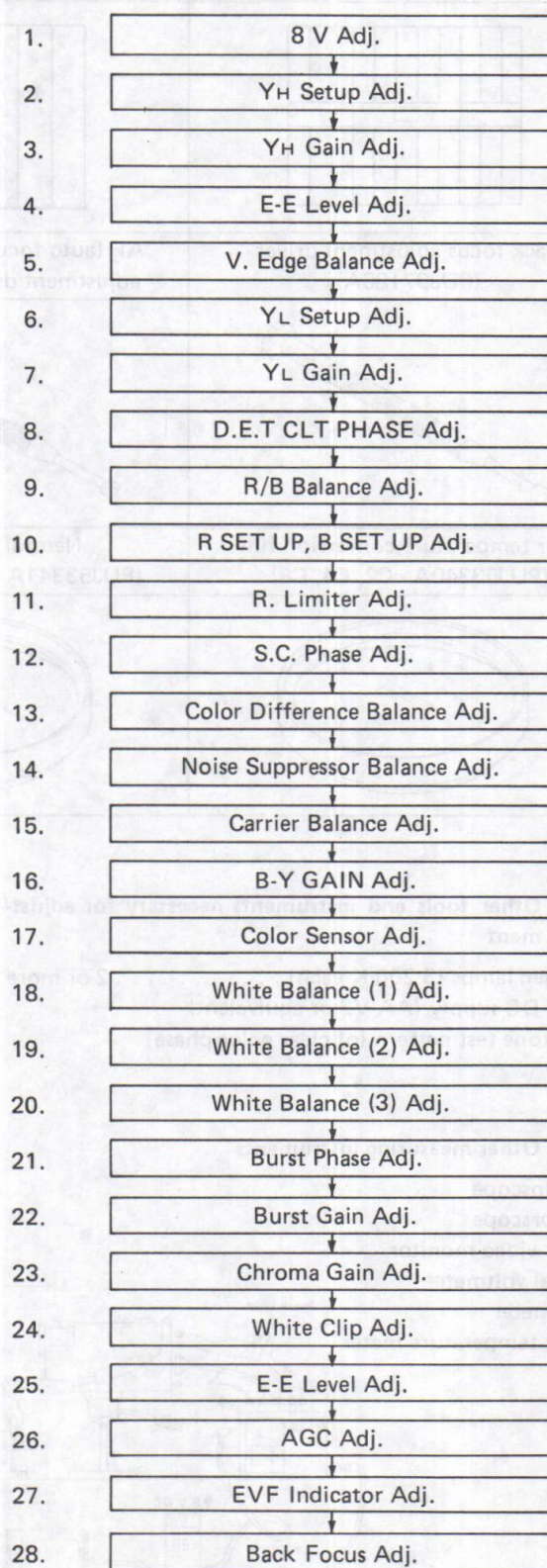
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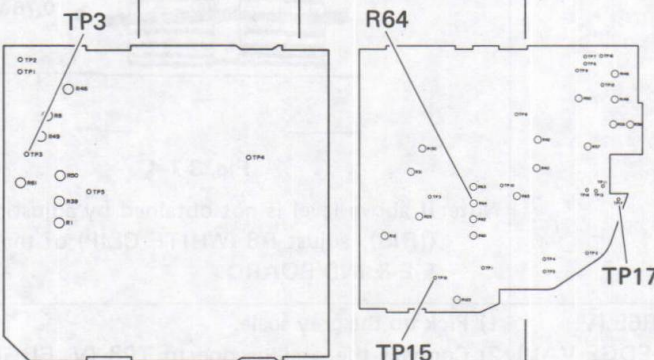
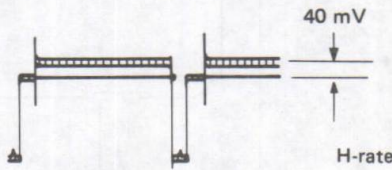
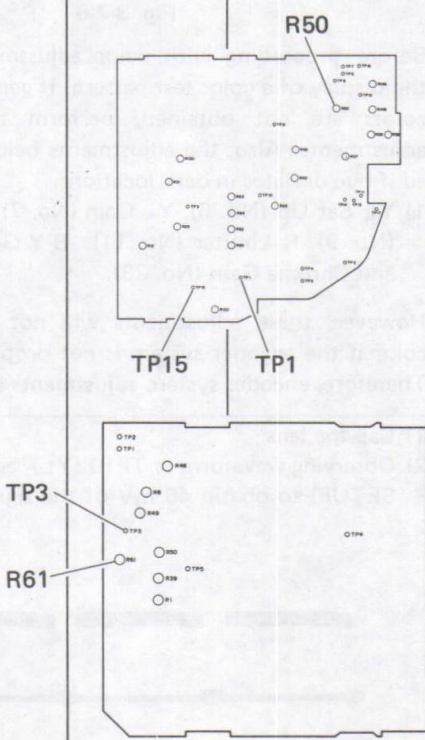
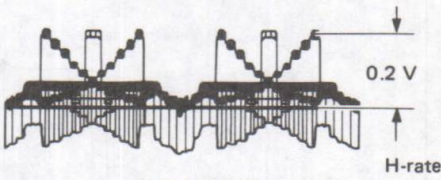
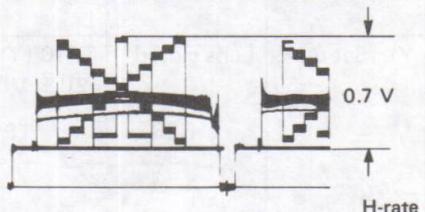
PUJ53340A-C2 + PUJ53340A-C4 = C2 + C4 = C6

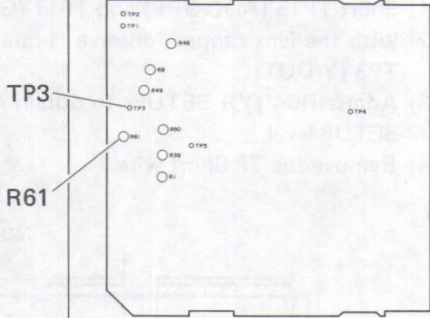
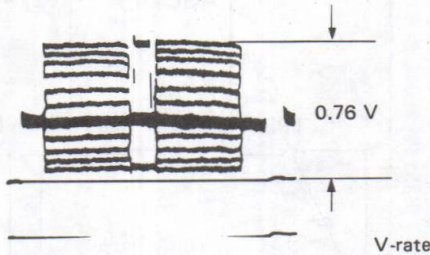
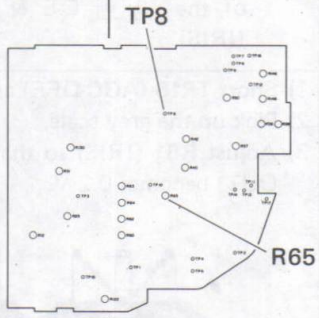
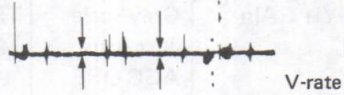
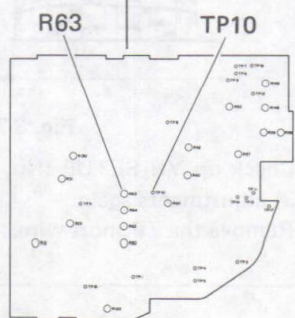
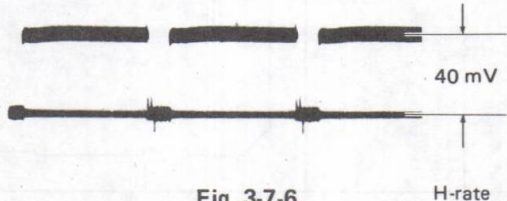
PUJ53341A-ND2 + PUJ53341A-ND8 = 2¹ + 2³ = 2⁴ = ND16

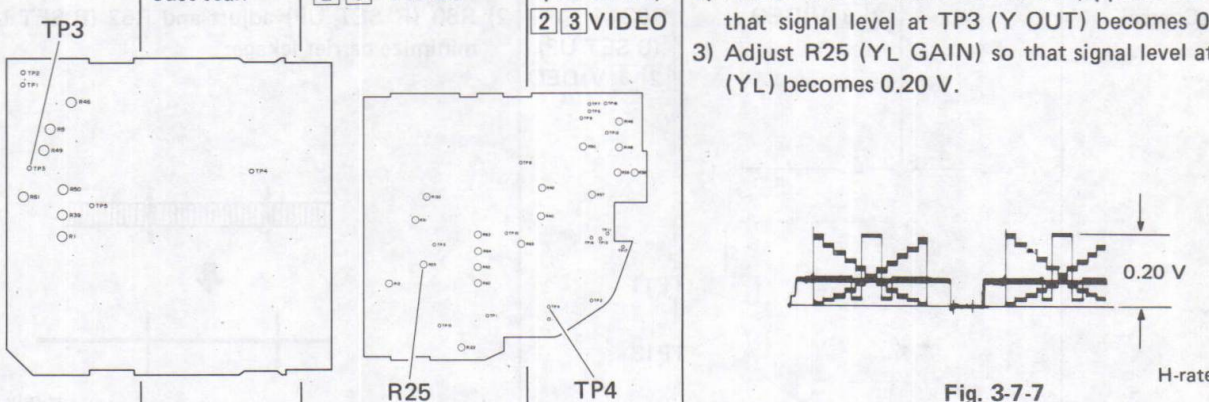
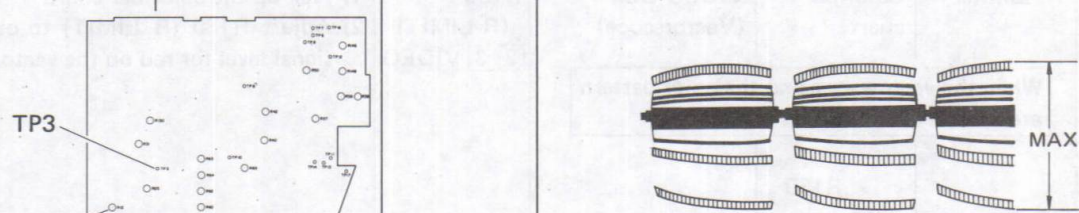
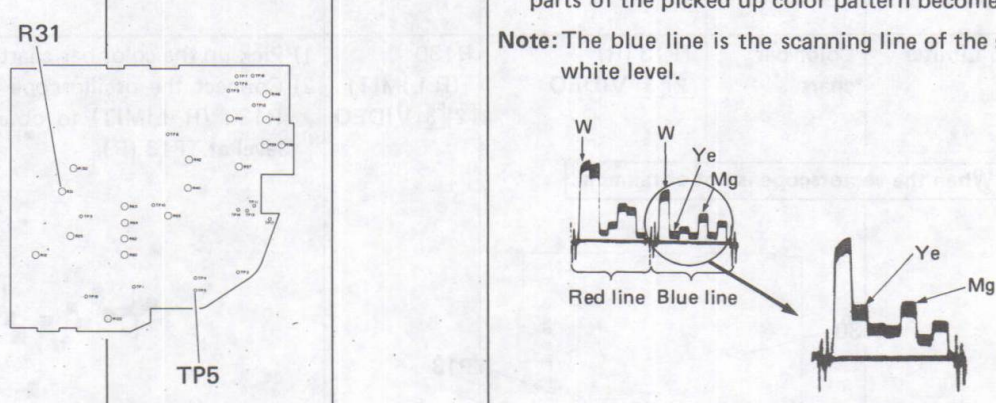
3.7.3 Camera adjustment procedure

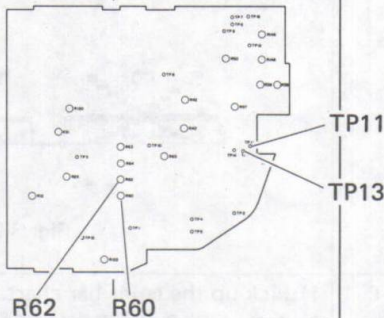
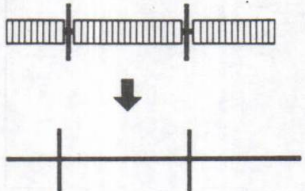
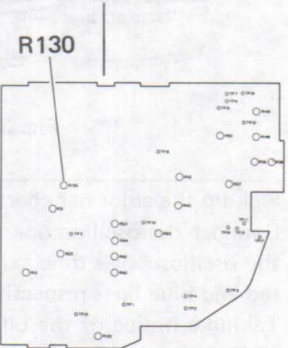
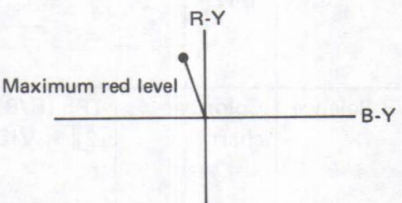
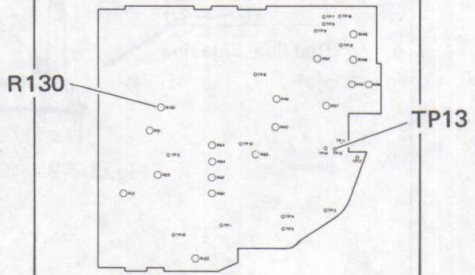

The following are the whole steps to adjust all VRs of the camera section in the order of adjustments. Consequently, here are some steps unnecessary for practical adjustments and repairs. Perform only the necessary items in practice.

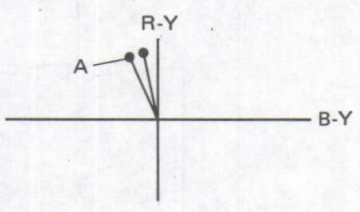
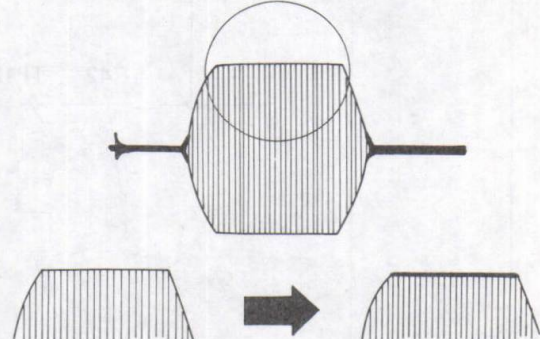
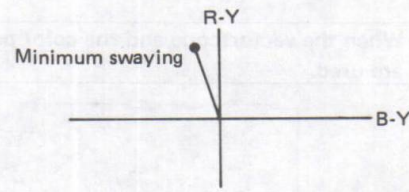


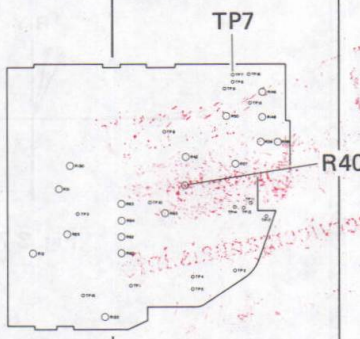
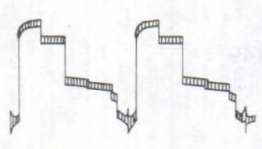
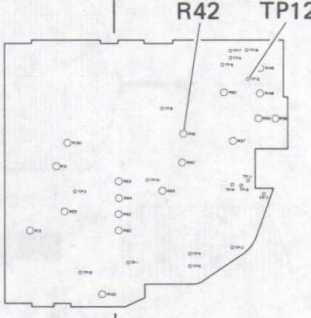
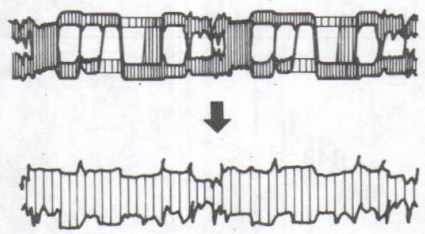
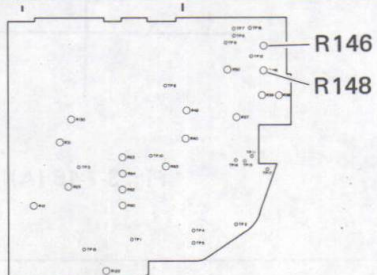
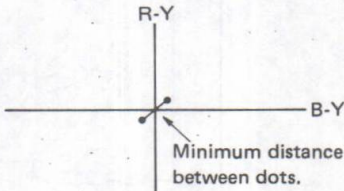
No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
1	8 V Adj.	Lens closed	CN-E5 pin 3 (SW 8 V (1)) 2 4 EE & IND	R6 (8 V Adj) 2 8 REG	1) Connect the digital voltmeter between CN-E5 pin 3 and GND. 2) Adjust R6 (8 V Adj) so that level at CN-E5 pin 3 becomes 8.0 ± 0.1 V.
2	YH Setup	Lens closed AGC OFF	TP3 (Y OUT) 2 4 E-E & IND	R64 (YH SETUP)	1) Short TP15 (AGC-OFF) and TP17 (GND). 2) With the lens capped, observe H-rate waveform at TP3 (Y OUT). 3) Adjust R64 (YH SETUP) to obtain 40 mV of the SETUP level. 4) Remove the TP Short wire.
					 <p>Fig. 3-7-1</p> <p>Note: If level is insufficient even when R64 (YH SET UP) is adjusted, adjust R50 (YH SET UP) of the 2 3 VIDEO board, R8 (WHITE CLIP) of the 2 4 E-E & IND BOARD and R61 (IRIS).</p>
3	YH GAIN	Grey scale Just scan AGC OFF	TP1 (S/H OUT) 2 3 VIDEO	R50 (YH GAIN) 2 3 VIDEO	1) Short TP15 (AGC-OFF) and TP17 (GND). 2) Pick up the grey scale. 3) Adjust R61 (IRIS) so that signal level at TP1 (S/H OUT) becomes 0.2 V.
					 <p>Fig. 3-7-2</p> <p>Note: Connect a 10 kΩ (or more) resistor between TP1 (S/H OUT) and the oscilloscope.</p> <p>4) In the above state, adjust R50 (YH GAIN) so that signal level at TP3 (Y OUT) becomes 0.7 V.</p>  <p>Fig. 3-7-3</p> <p>5) Check up YH SETUP (No. 2) and YH GAIN (No. 3) adjustments again. 6) Remove the TP short wire.</p>

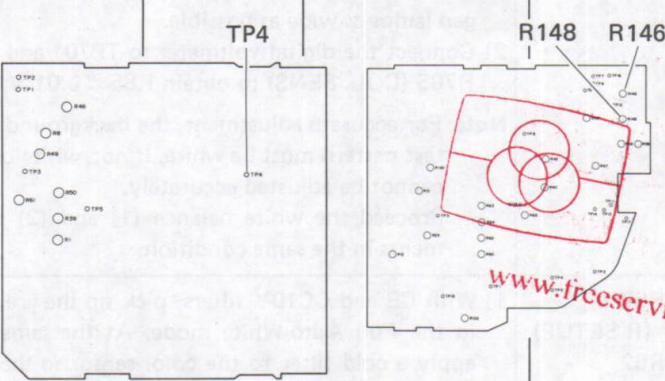
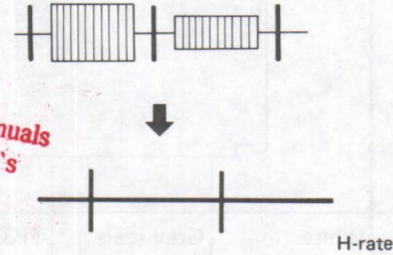
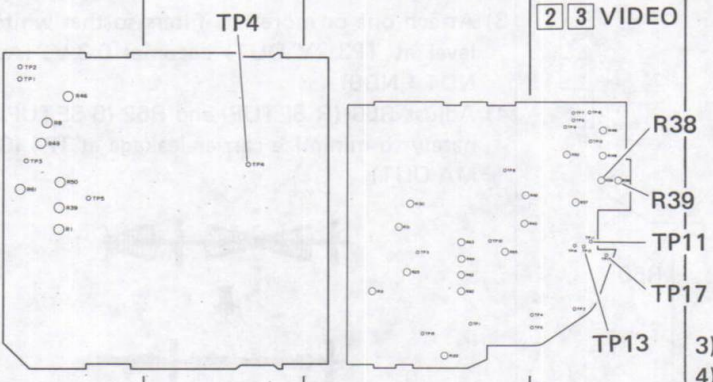
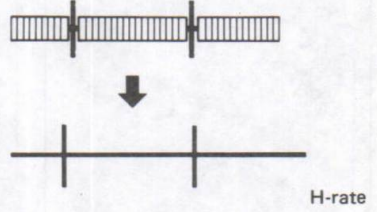
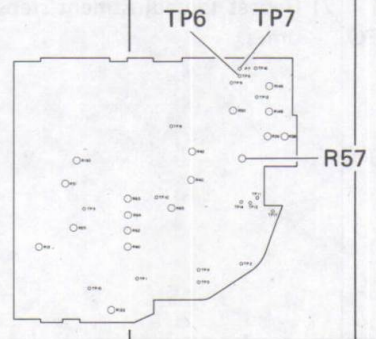
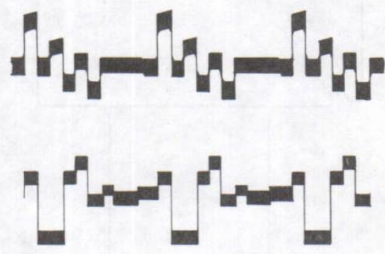
No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
4	E-E Level	Grey scale Just scan	TP3 (Y OUT) [2][4] E-E & IND	R61 (IRIS) [2][4] E-E & IND	<p>1) Pick up the grey scale by just scanning. (Precisely adjust the picture angle to set the grey scale's outer frame for the frame of image period.)</p> <p>2) Observing waveform at TP3 (Y OUT), adjust R61 (IRIS) so that signal level of white peak becomes 0.76 V.</p>   <p>Fig. 3-7-4</p> <p>Note: If above level is not obtained by adjusting R61 (IRIS), adjust R8 (WHITE CLIP) of the [2][4] E-E & IND BOARD.</p>
5	V. Edge Balance	Grey scale Just scan	TP8 (V. EDGE) [2][3] VIDEO	R65 (V. EDGE VAL) [2][3] VIDEO	<p>1) Pick up the grey scale.</p> <p>2) Connect the oscilloscope to TP8 (V. EDGE) and observe the waveform at V-rate.</p> <p>3) Adjust R65 (V. EDGE VAL) so that average level of the waveform becomes zero.</p>   <p>Fig. 3-7-5</p> <p>Before proceeding with color adjustments, observe the display of a color test pattern. If generally normal colors are not obtained, perform the following adjustments. Also, the adjustments below are required if hue deviates in dark locations.</p> <p>1) YL Set Up (No. 6), YL Gain (No. 7), R/B Balance (No. 9), R Limiter (No. 11), B-Y Gain (No. 16), and Chroma Gain (No. 23).</p> <p>However, these adjustments will not yield normal color if the encoder system is not properly adjusted. Therefore, encoder system adjustments are required.</p>
6	YL Set up	Lens closed	TP10 (YL) [2][3] VIDEO	R63 (YL SETUP) [2][3] VIDEO	<p>1) Cap the lens.</p> <p>2) Observing waveform at TP10 (YL), adjust R63 (YL SETUP) to obtain 40 mV of the signal waveform.</p>   <p>Fig. 3-7-6</p>

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
7	YL Gain	Grey scale Just scan	TP4 (YL) 2 3 VIDEO	R25 (YL GAIN) 2 3 VIDEO	<ol style="list-style-type: none"> 1) Pick up the grey scale. 2) Attach one or more ND filters (approx. ND8) so that signal level at TP3 (Y OUT) becomes 0.6 V. 3) Adjust R25 (YL GAIN) so that signal level at TP4 (YL) becomes 0.20 V.  <p>Fig. 3-7-7</p>
8	DET CTL PHASE	Color bar chart	TP3 (DET OUT) 2 3 VIDEO	R12 (DET PHASE)	<ol style="list-style-type: none"> 1) Pick up the color bar chart. 2) Adjust R12 (DET PHASE) to obtain the maximum signal level at TP3 (DET OUT).  <p>Fig. 3-7-8</p>
9	R/B Balance	Color bar chart just scan	TP5 (R/B) 2 3 VIDEO	R31 (R/B BAL) 2 3 VIDEO	<ol style="list-style-type: none"> 1) Pick up the color bar chart. 2) Connect the oscilloscope to TP5 (R/B) and adjust the oscilloscope's time axis to observe signal of the red and blue lines respectively. 3) Taking a notice of the blue line signal, adjust R31 (R/B BAL) so that levels of magenta and yellow parts of the picked up color pattern become equal. <p>Note: The blue line is the scanning line of the smaller white level.</p>  <p>Fig. 3-7-9</p>

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
10	R SET UP B SET UP (Coarse)	Lens closed	TP11 (B) TP13 (R) [2][3] VIDEO	R60 (R SET UP) R62 (B SET UP) [2][3] VIDEO	1) Connect oscilloscope to TP4 (C OUT) on [2][4] E-E & IND board. 2) R60 (R SET UP) adjust and R62 (B SET UP) to minimize carrier leakage.
					 <p style="text-align: right;">H-rate</p> <p style="text-align: center;">Fig. 3-7-10</p>
11 (1)	R. Limiter	Color bar chart	VIDEO OUT (Vectorscope)	R130 (R LIMIT) [2][3] VIDEO	1) Pick up the color bar chart. 2) Adjust R130 (R LIMIT) to obtain the maximum signal level for red on the vectorscope.
		<div style="border: 1px solid black; padding: 5px; width: fit-content;">When the vectorscope and the color pattern are used.</div> 		 <p style="text-align: center;">Fig. 3-7-11</p>	
11 (2)	R. Limiter	Color bar chart	TP13 (R) [2][3] VIDEO	R130 (R LIMIT) [2][3] VIDEO	1) Pick up the color bar chart. 2) Connect the oscilloscope to TP13 (R) and adjust R130 (R LIMIT) to obtain the maximum signal level at TP13 (R).
		<div style="border: 1px solid black; padding: 5px; width: fit-content;">When the vectorscope is not obtainable.</div> 		 <p style="text-align: right;">H-rate</p> <p style="text-align: center;">Fig. 3-7-12</p>	

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
12 (1)	S.C. Phase	Color bar chart	VIDEO OUT (Vector scope)	R49 (S. C. PHASE) 2 4 E-E & IND	1) Pickup a colour bar chart. 2) While observing with a vectorscope, adjust R49 (SC PHASE) to overlap Red end (A).  Fig. 3-7-13
12 (2)	S.C. Phase	Lens closed	TP4 (C. OUT) 2 4 E-E & IND	R49 (S.C. PHASE) 2 4 E-E & IND	1) Connect oscilloscope to TP4 (C OUT). Use the H-rate and burst sweep. 2) Adjust R49 (SC PHASE) for clearest edges.  Fig. 3-7-14
13 (1)	Color Difference Balance	Color bar chart	VIDEO OUT (Vectorscope)	R40 (COL. DIFF. BAL) 2 3 VIDEO	1) Pickup the color bar chart. 2) Adjust R40 so that swaying of red line becomes minimum on the vectorscope.  Fig. 3-7-15 (A)

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
13 (2)	Color Difference Balance	Color bar chart	TP7 (B-Y) [2] [3] VIDEO	R40 (COL. DIFF. BAL) [2] [3] VIDEO	<ol style="list-style-type: none"> 1) Observe the monitor display and adjust so that red and blue fill large portions of the picture area. 2) Connect oscilloscope to TP7 (B-Y) and observe at V-rate with center sweep. 3) Adjust R40 (COL DIF BAL) so that the waveform is the same every other horizontal line.
			<p>When the vectorscope is not obtainable</p> 		 <p>Fig. 3-7-15 (B)</p>
14	Noise Suppressor Balance	Color bar chart	TP12 (COLOR NOISE) [2] [3] VIDEO	R42 (NOISE SUP.) [2] [3] VIDEO	<ol style="list-style-type: none"> 1) Pick up the color bar chart. 2) Adjust R42 (NOISE SUP) so that waveform at TP12 (COLOR NOISE) is most balanced as shown in the figure.
					 <p>Fig. 3-7-16</p> <p>Note: If the Color Difference Balance adjustment (9-[1], 9-[2]) has been poorly performed, satisfactory result cannot be obtained in this adjustment. (When the previous adjustment was performed in the way of 9(2), alternately repeat these two adjustments several times.</p>
15 (1)	Carrier Balance	Lens closed	VIDEO OUT (Vectorscope)	R146 (B L.S. CARRIER BAL) [2] [3] VIDEO R148 (R L.S. CARRIER BAL) [2] [3] VIDEO	<ol style="list-style-type: none"> 1) Adjust R146 (B. L. S. CARRIER BAL) and R148 (R L.S. CARRIER BAL) so that the distance between the dots becomes minimum on the vector-scope.
			<p>When the vectorscope and the color pattern are used.</p> 		 <p>Fig. 3-7-17 (A)</p>

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
15 (2)	Carrier Balance	Lens closed	TP4 (C. OUT) 2 4 E-E & IND	R146 (B L.S. CARRIER BAL) R148 (R L.S.	1) Connect the oscilloscope to TP4 (C OUT). 2) Adjust R146 (B L.S. CARRIER BAL) and R148 (R L.S. CARRIER BAL) to obtain the minimum signal level at TP4 (C OUT).
<p>When the vectorscope and the color pattern are not obtainable.</p>  <p>Free service manuals Gratis schema's Digitized by www.freesevicemanuals.info</p>  <p>Fig. 3-7-17 (B)</p>					
15 (3)	Carrier Balance	Lens closed	TP4 (CHROMA OUT) 2 4 E-E & IND	R38 (R CARR. BAL) R39 (B CARR. BAL) 2 3 VIDEO	1) With the lens capped, short TP11 (B), TP13 (R) and TP17 (GND). 2) Observing waveform at TP4 (CHROMA OUT), adjust R38 (R. CARR. BAL) and R39 (B. CARR. BAL) alternately to minimize the carrier leakage.
  <p>Fig. 3-7-18</p> <p>3) Remove the TP short wire. 4) Repeat the adjustments of items 14 (1) to 14 (3) several times.</p>					
16	B-Y GAIN Adj.	Color bar Just scan	TP6 (B-Y) TP7 (R-Y) 2 3 VIDEO	R57 (B-Y) 2 3 VIDEO	1) Connect oscilloscope to TP6 (B-Y) and TP7 (R-Y). 2) Adjust R57 (B-Y) for same amplitude of two waveform use in dual trace mode.
  <p>Fig. 3-7-19</p>					

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
17	Color Sensor	3200 K C8 filter Grey scale	TP701 (COL. SENS) ② ⑥ CTL & FAW	R705 (COL. SENS) ② ⑥ CTL & FAW	<p>1) Through a filter (C8), apply the light reflected from the grey scale to the color sensor (which should be set with the white filter cap and its bracket). Cover the color sensor's back with black vinyl tape to shut off other light and rays. The grey scale should be set on a white wall and apply rays of the halogen lamps as wide as possible.</p> <p>2) Connect the digital voltmeter to TP701 and adjust R705 (COL. SENS) to obtain 1.85 ± 0.01 V.</p> <p>Note: For accurate adjustment, the background of the test pattern must be white. If not, white balance cannot be adjusted accurately. Proceed the white balance (1) and (2) adjustments in the same condition.</p>
18	White Balance (1)	Grey scale FAW mode C8 + CC10Y → Lens C8 → Sensor	TP3 (Y OUT) TP4 (CHROMA OUT) ② ④ E-E & IND	R60 (R SETUP) R62 (B SETUP) ② ③ VIDEO	<p>1) With C8 and CC10Y filters, pick up the grey scale in the Full Auto-White mode. At the same time, apply a cold filter to the color sensor so that voltage at TP701 becomes 1.85 ± 0.01 V, and pay attention that this voltage will be kept after that.</p> <p>Note: Be careful not to apply lights and rays other than the halogen lamps to the color sensor.</p> <p>2) Short TP15 (AGC-OFF) and TP17 (GND).</p> <p>3) Attach one or more ND filters so that white peak level at TP3 (Y OUT) becomes 0.3 V. (Approx. ND4 + ND8)</p> <p>4) Adjust R60 (R SETUP) and R62 (B SETUP) alternately to minimize carrier leakage at TP4 (CHROMA OUT).</p> <p>5) Adjust R61 (IRIS) so that white peak level at TP3 (Y OUT) becomes 0.6 V.</p> <p>6) Adjust R718 (R GAIN INDOOR) and R733 (B GAIN INDOOR) alternately to minimize carrier leakage at TP4 (CHROMA OUT).</p> <p>7) Repeat the adjustment steps 2) through 5) several times.</p>

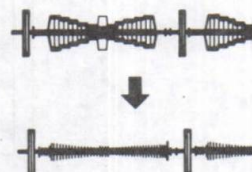
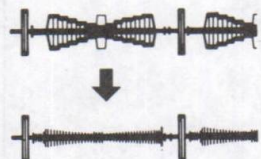
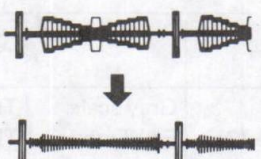


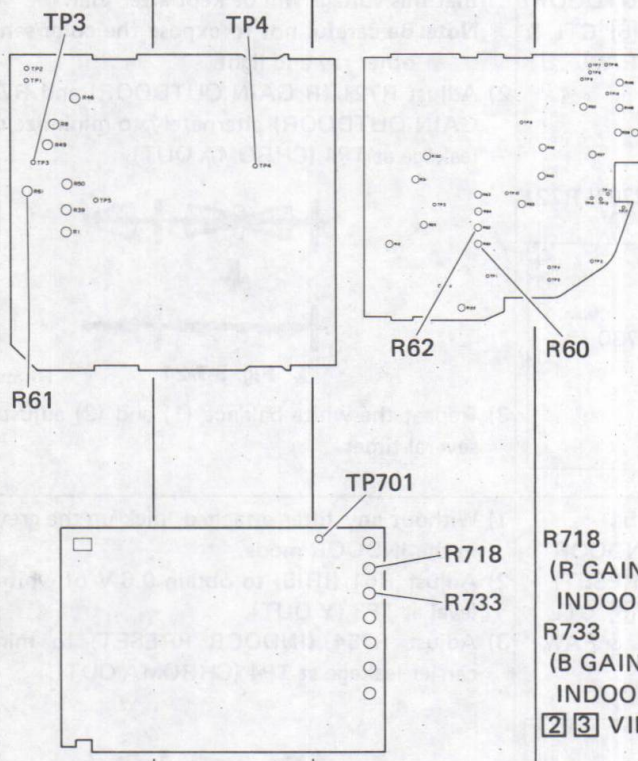
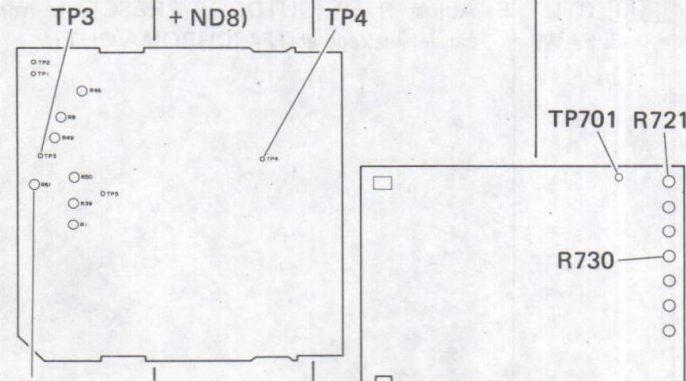
Fig. 3-7-20

H-rate

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
19	White Balance (2)	Grey scale FAW mode C14 → Lens TP1 → 2.20 ± 0.01 V (with Cold filter) (approx. C16 + ND8)	TP3 (Y OUT) TP4 (CHROMA OUT) [2] [4] E-E & IND	R721 (R GAIN OUTDOOR) R730 (B GAIN OUTDOOR) [2] [6] CTL & FAW	<p>1) Attach a C14 filter to the lens, and pick up the grey scale in the Full Auto-White mode. At the same time, attach a cold filter to the color sensor (in front of the white filter cap) so that voltage at TP701 becomes 2.20 ± 0.01 V, and pay attention that this voltage will be kept after that. Note: Be careful not to expose the color sensor to other ray and light.</p> <p>2) Adjust R721 (R GAIN OUTDOOR) and R730 (B GAIN OUTDOOR) alternately to minimize carrier leakage at TP4 (CHROMA OUT).</p>  <p>Fig. 3-7-21 H-rate</p> <p>3) Repeat the white balance (1) and (2) adjustments several times.</p>
20	White Balance (3)	Grey scale Indoor mode C14 filter	TP3 (Y OUT) TP4 (CHROMA OUT) [2] [4] E-E & IND	R754 (INDOOR PRESET) [2] [6] CTL & FAW R753 (OUTDOOR PRESET) [2] [6] CTL & FAW	<p>1) Without any filter attached, pick up the grey scale in the INDOOR mode.</p> <p>2) Adjust R61 (IRIS) to obtain 0.6 V of white peak level at TP3 (Y OUT).</p> <p>3) Adjust R754 (INDOOR PRESET) to minimize carrier leakage at TP4 (CHROMA OUT).</p>  <p>Fig. 3-7-22 H-rate</p> <p>4) Set the camera for the OUTDOOR mode and pick up the grey scale with a C14 filter attached to the lens.</p> <p>5) Adjust R753 (OUTDOOR PRESET) to minimize carrier leakage at TP4 (CHROMA OUT).</p>

Approximate adjustment

In situations where requirements are not severe, the following simplified adjustment procedure can be performed.

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
A	White Balance (1)	Grey scale FAW mode C8 + CC10Y → Lens C8 → Sensor	TP3 (Y OUT) TP4 (CHROMA OUT) ② ④ E-E & IND	R60 (R SETUP) R62 (B SETUP) ② ③ VIDEO	<p>1) In the full auto white mode, pick-up a greyscale through a C8 filter. Connect a digital voltmeter to TP1 (COL SENS) and adjust R705 for 1.85 ± 0.01 V. Note: Be careful not to apply lights and rays other than the halogen lamps to the color sensor.</p> <p>2) Short TP15 (AGC-OFF) and TP17 (GND).</p> <p>3) Attach one or more ND filters so that white peak level at TP3 (Y OUT) becomes 0.3 V. (Approx. ND4 + ND8)</p> <p>4) Adjust R60 (R SETUP) and R62 (B SETUP) alternately to minimize carrier leakage at TP4 (CHROMA OUT).</p>
					<p>5) Adjust R61 (IRIS) so that white peak level at TP3 (Y OUT) becomes 0.6 V.</p> <p>6) Adjust R718 (R GAIN INDOOR) and R733 (B GAIN INDOOR) alternately to minimize carrier leakage at TP4 (CHROMA OUT).</p> <p>7) Repeat the adjustment steps 2) through 5) several times.</p>
B	White Balance (2)	Grey scale FAW mode C14 → Lens TP1 → 2.20 ± 0.01 V (with Cold filter) (approx. C16 + ND8)	TP3 (Y OUT) TP4 (CHROMA OUT) ② ④ E-E & IND	R721 (R GAIN OUTDOOR) R730 (B GAIN OUTDOOR) ② ⑥ CTL & FAW	<p>1) In the full auto white mode, install a C14 filter and pick-up a greyscale. Connect a digital voltmeter to TP1 (COL SENS) and adjust R705 for 2.20 ± 0.01 V. Note: Be careful not to expose the color sensor to other ray and light.</p> <p>2) Adjust R721 (R GAIN OUTDOOR) and R730 (B GAIN OUTDOOR) alternately to minimize carrier leakage at TP4 (CHROMA OUT).</p>
					<p>3) Repeat the white balance (1) and (2) adjustments several times.</p>

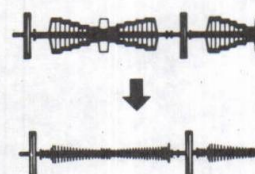


Fig. 3-7-23

H-rate

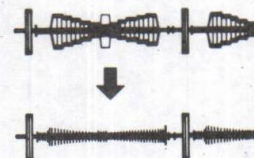
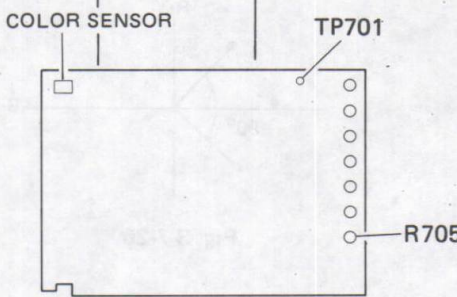
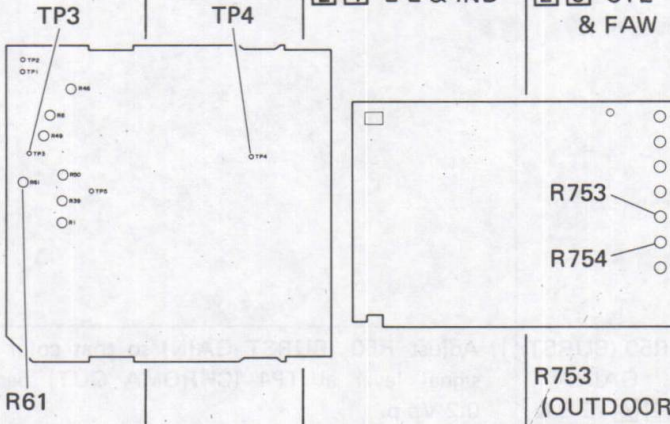
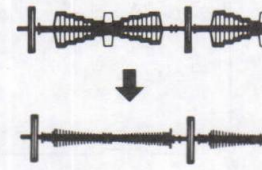
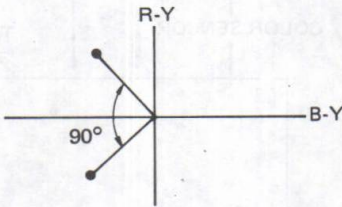
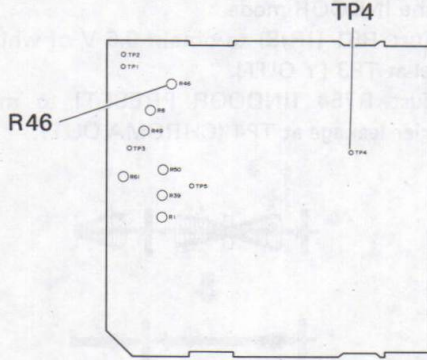
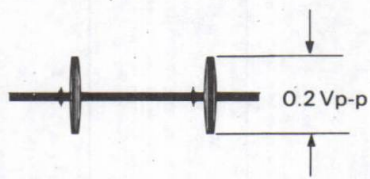
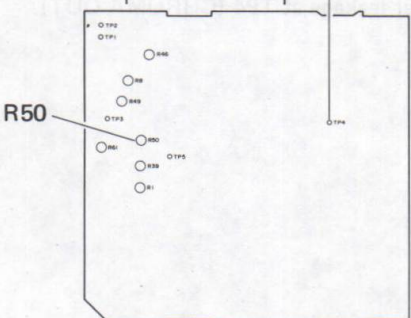
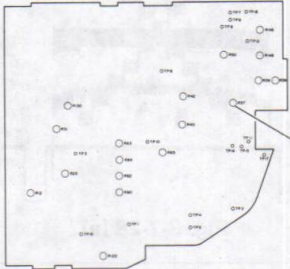
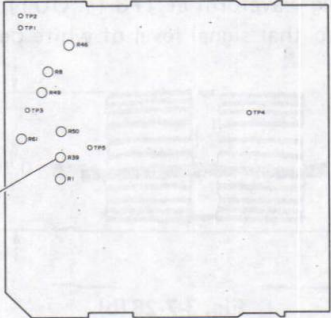
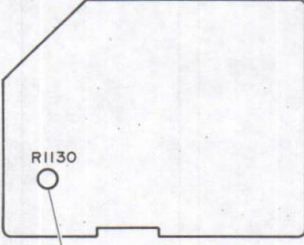
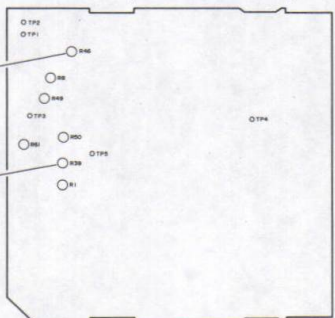
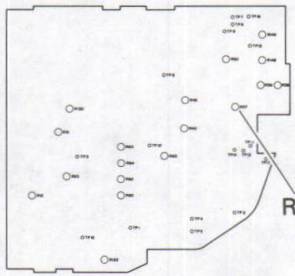
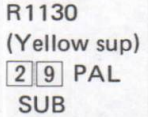


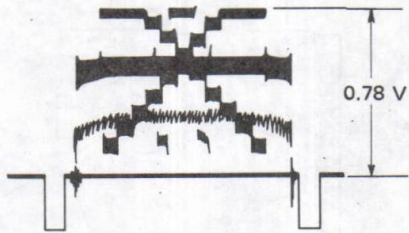
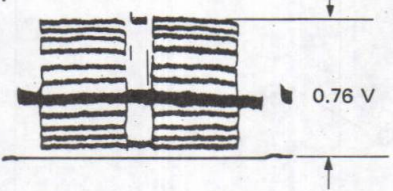
Fig. 3-7-24

H-rate

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
C	Color Sensor	3200 K C8 filter Grey scale	TP701 (COL. SENS) [2] [6] CTL & FAW	R705 (COL. SENS) [2] [6] CTL & FAW	<p>1) Through a filter (C8), apply the light reflected from the grey scale to the color sensor (which should be set with the white filter cap and its bracket). Cover the color sensor's back with black vinyl tape to shut off other light and rays. The grey scale should be set on a white wall and apply rays of the halogen lamps as wide as possible.</p> <p>2) Connect the digital voltmeter to TP701 and adjust R705 (COL. SENS) to obtain 1.85 ± 0.01 V.</p> <p>Note: For accurate adjustment, the background of the test pattern must be white. If not, white balance cannot be adjusted accurately. Proceed the white balance (1) and (2) adjustments in the same condition.</p>
					
D	White Balance (3)	Grey scale Indoor mode C14 filter	TP3 (Y OUT) TP4 (CHROMA OUT) [2] [4] E-E & IND	R754 (INDOOR PRESET) [2] [6] CTL & FAW	<p>1) Without any filter attached, pick up the grey scale in the INDOOR mode.</p> <p>2) Adjust R61 (IRIS) to obtain 0.6 V of white peak level at TP3 (Y OUT).</p> <p>3) Adjust R754 (INDOOR PRESET) to minimize carrier leakage at TP4 (CHROMA OUT).</p>
					 <p>Fig. 3-7-25 H-rate</p> <p>4) Set the camera for the OUTDOOR mode and pick up the grey scale with a C14 filter attached to the lens.</p> <p>5) Adjust R753 (OUTDOOR PRESET) to minimize carrier leakage at TP4 (CHROMA OUT).</p>

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
21 (1)	Burst Phase	Color bar chart	VIDEO OUT (Vectorscope)	R46 (B PHASE) 2 4 E-E & IND	1) Adjust R46 (B PHASE) so that burst phase angle becomes 90° as shown in the figure below. <div></div>
			When the vectorscope and the color pattern are used.		Fig. 3-7-26
21 (2)	Burst Phase	Lens closed	TP4 (C OUT) 2 4 E-E & IND	R46 (B. PHASE) 2 4 E-E & IND	1) Connect oscilloscope to TP4 (C OUT) and observe the burst signal. 2) Adjust R46 (B PHASE) for minimum burst signal.
			When the vectorscope and the color pattern are not obtainable.		
			<div></div>		
22	Burst Gain	Lens closed	TP4 (CHROMA OUT) 2 4 E-E & IND	R50 (BURST GAIN) 2 4 E-E & IND	1) Adjust R50 (BURST GAIN) so that color burst signal level at TP4 (CHROMA OUT) becomes 0.2 Vp-p. <div></div>
			<div></div>		Fig. 3-7-27

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
23 (1)	Chroma Gain B-Y Gain Yellow Sup	Color bar chart	VIDEO OUT (Vectorscope)	R39 (CHROMA GAIN) 2 4 EE & IND R57 (B-Y) 2 3 VIDEO R1130 (Yellow sup) 2 9 SUB CAR	1) Pickup a colour bar chart. 2) Set for 100% burst level. 3) Adjust R39 (CHROMA GAIN) so that Red level is slightly less than 100%. 4) Turn R1130 (YELLOW SUP) fully clockwise. 5) Adjust R57 (B-Y) for 100% magenta level. 6) Adjust R1130 (YELLOW SUP) so that yellow appears at edge of vectorscope. 7) Repeat above adjustments 4 through 6 several times.
  					
23 (2)	Chroma Gain	Object whose color phase is easily distinguishable	Monitor-TV	R39 (CHROMA GAIN) 2 4 E-E & IND R57 (B-Y GAIN) 2 3 VIDEO	<p>Note: For proceeding this adjustment, color phase and density of a monitor-TV to use, R9 (E-E Y LEVEL) and R11 (E-E C LEVEL) of the Y/C board of the deck section have been accurately adjusted.</p> <p>1) Picking up a colored object and observing a monitor-TV, adjust R39 (CHROMA GAIN) to obtain appropriate chroma amount.</p> <p>2) Picking up an object whose color phase is distinguishable and observing a monitor-TV, perform fine adjustments of R1130 (Yellow sup) and R57 (B-Y GAIN) to obtain the most natural colors of red, green, blue and skin tone.</p> <p>Note: Be sure to perform just fine adjustments.</p> <p>Before proceeding this adjustment, confirm that the color sensor adjustment (No. 17) and white Balance (1), (2), (3) adjustment, (No. 18, 19, 20) have been completed.</p>
<p>When the vectorscope and the color pattern are not obtainable.</p>   					

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
24	White Clip Adj.	Grey scale Just scan	TP3 (Y OUT) 2 4 E-E & IND	R8 (WHITE CLIP) 2 4 E-E & IND	<p>1) Pick up the grey scale and adjust R61 (IRIS) to open the iris in order to choke signals.</p> <p>2) Adjust R8 (WHITE CLIP) so that white peak level at TP3 (Y OUT) becomes 0.78 V.</p>  <p>Fig. 3-7-28 (a) H-rate</p>
25	E-E Level	Grey scale Just scan	TP3 (Y OUT) 2 4 E-E & IND	R61 (IRIS) 2 4 E-E & IND	<p>1) Pick up the grey scale by just scanning. (Precisely adjust the picture angle to set the grey scale's outer frame for the frame of image period.)</p> <p>2) Observing waveform at TP3 (Y OUT), adjust R61 (IRIS) so that signal level of white peak becomes 0.76 V.</p>  <p>Fig. 3-7-28 (b) V-rate</p> <p>Note: Before proceeding this adjustment, confirm that the YH SETUP adjustment (No. 2) and YH GAIN adjustment (No. 3) have been completed.</p>
26	AGC	Iris closed	TP15 (AGC OFF) 2 3 VIDEO	R122 (AGC) 2 3 VIDEO	<p>1) Connect the digital voltmeter between TP15 (AGC OFF) and TP17 (GND).</p> <p>2) Adjust R122 (AGC) so that level at TP15 (AGC OFF) becomes 2.0 V \pm 0.05 V.</p>

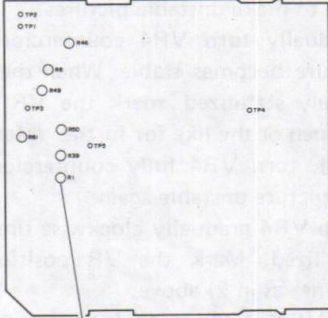
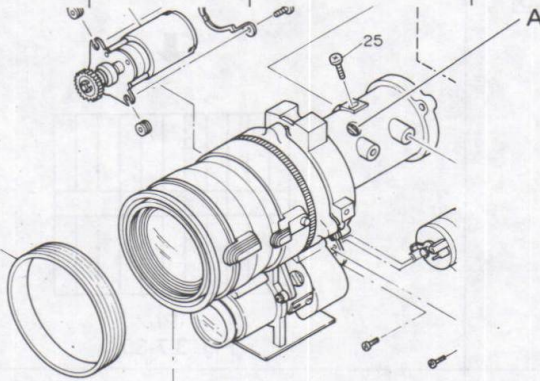
No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
27	Indicator Adj.	Lens closed	Electronic Viewfinder	R1 (IND OSC) 2 4 E-E & IND	1) Adjust R1 (IND OSC) so that the indicator inside the electronic viewfinder is positioned at the center. 
28	Back Focus Adj.	Object far apart 100 m or more Iris opened (w/ND filter)	VIDEO OUT (Monitor picture)	Master Lens	1) Shoot an object as much as 100 m (or far ahead) with the lens set to the wide-angle position (9 mm). 2) Attach an ND filter to the lens and open the iris. (Confirm that "LIGHT" indication appears on the electronic viewfinder's screen). 3) Set the focus ring to the infinity (∞). 4) Loosen the screw (25), and adjust the position of the master lens (A) with the back focus adjustment driver, and then, bring the object into focus viewing the monitor's picture. 5) After the above adjustment, tighten the screw (25) and check up the focus again. 

Fig. 3-7-29

3.7.4 Electronic viewfinder (EVF) adjustment

Caution: High voltage appears at the CRT anode, HV module, etc.

No.	Item	Mode	Check Point	Adjustment Parts	Adjustment & Checkup
1	Horizontal Sync.	Grey scale or Monoscope	EVF (CRT)	VR4 (H. HOLD) 3 0 VF (1)	<ol style="list-style-type: none"> 1) Observing the viewfinder, turn VR4 fully clockwise to make unstable pictures. 2) Gradually turn VR4 counterclockwise until the picture becomes stable. When the picture is completely stabilized, mark the VR position with a felt pen or the like for further reference. 3) Next, turn VR4 fully counterclockwise to make the picture unstable again. 4) Turn VR4 gradually clockwise until the picture is stabilized. Mark the VR position in the same manner as in 2) above. 5) Set VR4 at the midpoint between the two markings.
<p style="text-align: center;">(a)</p> <p style="text-align: center;">↓</p> <p style="text-align: center;">(b)</p> <p style="text-align: center;">Fig. 3-7-30</p>					
2	Vertical Scanning	Grey scale or Monoscope	EVF (CRT)	VR3 (V. HEIGHT) 3 0 VF (1)	<ol style="list-style-type: none"> 1) Observing the viewfinder, adjust VR3 for normal picture amplitude.
3	Centering	Grey scale	EVF (CRT)	Centering magnet	<ol style="list-style-type: none"> 1) Pick up the grey scale to locate it at the center of TV picture, adjust the centering magnet so that image of the grey scale is positioned at the center of the viewfinder screen.
4	Focus	Grey scale	EVF (CRT)	Focus magnet	<ol style="list-style-type: none"> 1) Observing the viewfinder, adjust the focus magnet of the deflection yoke to obtain a clear picture of the central part of the grey scale image.
5	Brightness	Iris closed (Lens capped)	EVF (CRT)	VR2 (BRIGHT) 3 0 VF (1)	<ol style="list-style-type: none"> 1) With the iris closed, adjust VR2 so that the CRT raster of the viewfinder is just barely visible.
6	Contrast	Grey scale	EVF (CRT)	VR1 (CONT) 3 0 VF (1)	<ol style="list-style-type: none"> 1) Observing the viewfinder, adjust VR1 to obtain the best gradation of the grey scale image.

3.8 REPLACEMENT AND ADJUSTMENTS OF AUTO FOCUS (AF) BOARD

3.8.1 AF board unit

The AF board unit is mainly consists of the pre-aligned TCL sensor and the AF lens assembly whose electrical adjustments are completely performed at the factory. (See Fig. 3-8-1.)

Therefore, main electrical adjustment of the AF board unit is alignment of the TCL sensor.

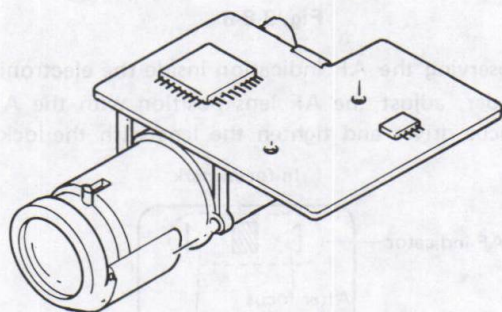


Fig. 3-8-1

3.8.2 AF board unit replacement

1. Remove two screws (A) and three screws (B) securing the AF board unit, and pull out the AF board unit in the direction of the arrow.
2. Replace the AF board unit with a new one and fix it with the screws in the reverse order of its removal.

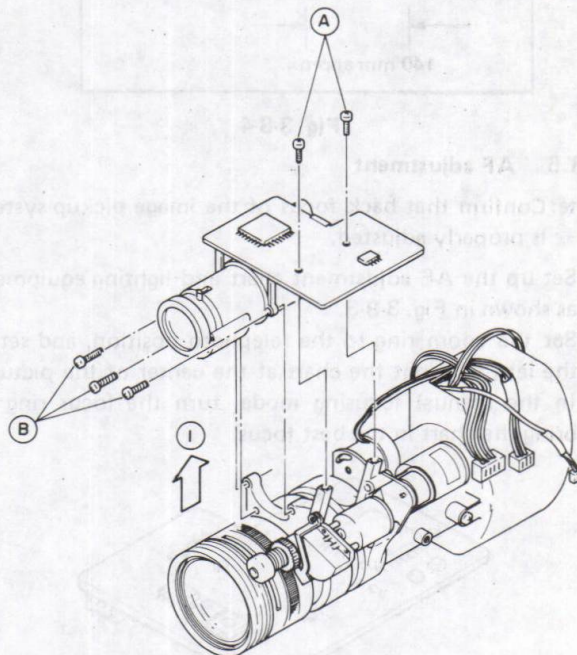


Fig. 3-8-2

3.8.3 Adjustment parts location

Shooting the test pattern with the iris opened, adjust light intensity so that the "LIGHT" of the indicator display on the electronic viewfinder is flickering.

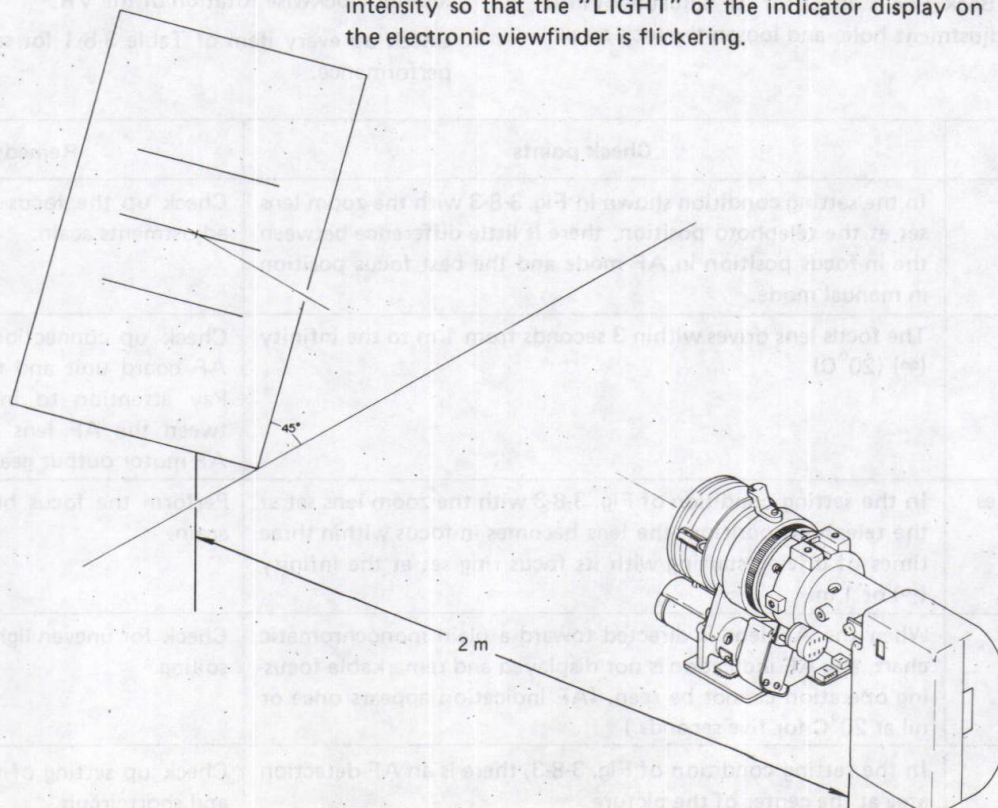


Fig. 3-8-3

3.8.4 AF adjustment chart

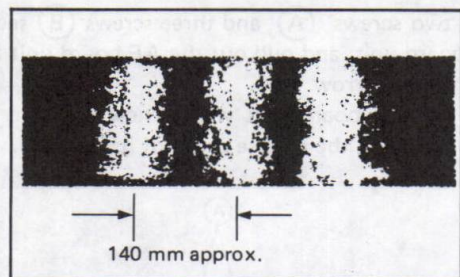


Fig. 3-8-4

3.8.5 AF adjustment

Note: Confirm that back focus of the image pickup system is properly adjusted.

1. Set up the AF adjustment chart and lighting equipment as shown in Fig. 3-8-3.
2. Set the zoom ring to the telephoto position, and settle the lens to shoot the chart at the center of the picture. In the manual focusing mode, turn the focus ring to bring the chart in the best focus.

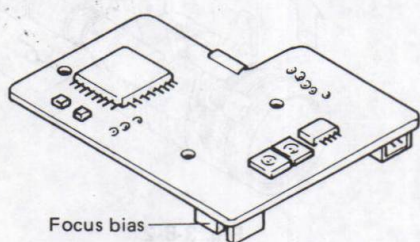


Fig. 3-8-5

3. Insert the AF Back Focus driver for AF adjustment into the AF lens adjustment hole, and loosen the lock screw.

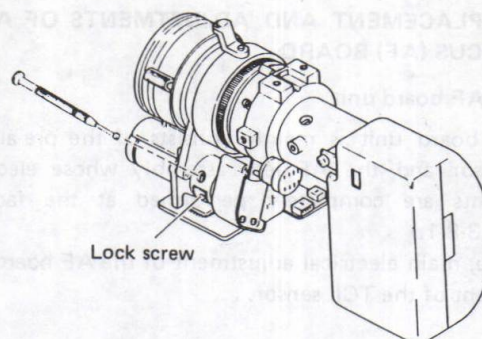


Fig. 3-8-6

4. Observing the AF indication inside the electronic viewfinder, adjust the AF lens position with the AF Back Focus driver and tighten the lens with the lock screw.

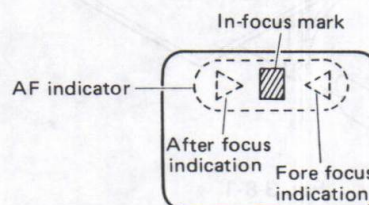



Fig. 3-8-7

5. Repeat the same sequence of section 2.3. However, separate the AF unit and AF adjustment chart by 4 meters.
6. While observing the viewfinder display, use tweezers to turn the focus bias VR to where focus indication. Set to the position midway between where the focus indication extinguishes during clockwise rotation and during counter-clockwise rotation of the VR.
7. Check up every item of Table 3-8-1 for satisfactory AF performance.

Item	Check points	Remedy
Auto Focus	In the setting condition shown in Fig. 3-8-3 with the zoom lens set at the telephoto position, there is little difference between the in-focus position in AF mode and the best focus position in manual mode.	Check up the focus and AF focus adjustments again.
Focusing Time	The focus lens drives within 3 seconds from 1 m to the infinity (∞) (20°C).	Check up connection between the AF board unit and the AF motor. Pay attention to interference between the AF lens frame and the AF motor output gear.
AF Control Times	In the setting condition of Fig. 3-8-3 with the zoom lens set at the telephoto position, the lens becomes in-focus within three times of driving starting with its focus ring set at the infinity (∞) or 1 m.	Perform the focus bias adjustment again.
Low Contrast	When the AF lens is directed toward a plain monochromatic chart, any AF indication is not displayed and remarkable focusing operation cannot be seen. (AF indication appears once or nil at 20°C for five seconds.)	Check for uneven lighting and chart soiling.
AF Area	In the setting condition of Fig. 3-8-3, there is an AF detection area at the center of the picture.	Check up setting of the board unit and shortcircuit.

SECTION 4 DIAGRAMS AND CIRCUIT BOARDS

4.1 SCHEMATIC DIAGRAM NOTES

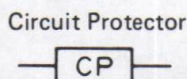
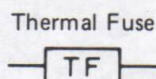
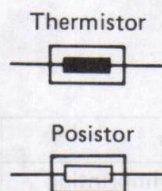
1.  parts are safety related parts. When replacing them, be sure to use the specified parts.
2. Voltage and waveform measurements.
Voltage: Measured with a digital voltmeter in DC range.
Waveform: When the grey scale pattern which is lighted up brightly is shot in the Full-Auto mode, waveforms become as follow;

3. Unit indications

No units: $[\Omega]$
K: $[k\Omega]$
M: $[M\Omega]$

No units: $[\mu F]$
P: $[pF]$

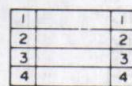
$\mu/\mu H$: $[\mu H]$
m: $[mH]$



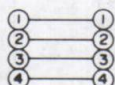
Connector



Connector soldered to board (solder)




Connector (Boards connected directly to each other)

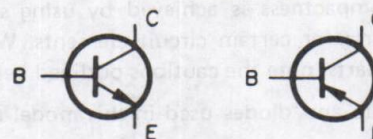


Joined by soldering

COUNT UP : Active only at high.
COUNT DOWN : Active only at low.

 : Connected pattern in the board.

4. Chip transistor

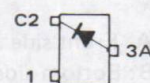


(Standard type)

5. Chip diode

RD5.6M-T1B
RD5.6M-T2B
RD7.5M-T1B2
RD7.5M-T1B3
MA3075M
MA3075H
RD3.9M-T1B
MA704

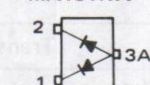
MA151A



DAN202K
MA151WK



DAP202K
MA151WA



MA153



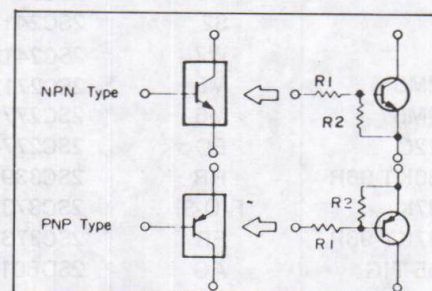
DA204K



MA151K



6. Digital transistor



RESISTOR VALUES

JUNCTION	Part No.	R1 (k Ω)	R2 (k Ω)
PNP	DTA124EK	22	22
	DTA144EK	47	47
	UN2112	22	22
NPN	FA1F4M	47	47
	DTC144EK	47	47
	DTC114YK	10	47

Note: The digital transistor includes built in resistors.
It features small size and high reliability.
Both PNP and NPN types are available.

USES: INVERTER, INTERFACE, DRIVER CIRCUITS.

4.2 REPLACING SUBMINIATURE "CHIP" PARTS

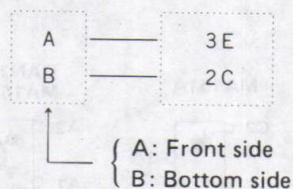
1. Some resistors, shorting jumpers ($0\ \Omega$ resistance), ceramic capacitors, transistors, and diodes are chip parts. These chip parts cannot be reused after they are once removed.

2. Additional compactness is achieved by using subminiature chip parts for certain circuit elements. When replacing these parts, note the cautions outlined below.

Chip transistors and diodes used in this model are outlined as follows.

3. Chip part addresses

In the circuit diagrams, blue lettering refers to chip part mounting position addresses.



4. Required tools:

- 1) Fine tipped, well insulated soldering "pencil", about 30 Watts.
- 2) Tweezers
- 3) Blower type hair dryer.

5. Soldering cautions:

- 1) Do not apply heat for more than 3 seconds.
- 2) Avoid using a rubbing stroke when soldering.
- 3) Discard removed chips; do not reuse them.
- 4) Supplementary cementing is not required.
- 5) Use care not to scratch or otherwise damage the chips.

6. Removal (resistors, capacitors, etc.):

- 1) Melt the solder at one side.



Fig. 4-1

• Chip transistor and chip diode imprinting

Transistors				Diodes	
Type	Imprinting	Type	Imprinting	Type	Imprinting
DTA124EK	15	2SC1009A	(FA3,FA4)	DA204K	ORANGE
DTA144EK	16	2SC1623	L(4-7)	DAN202K	GRAY
DTC114YK	64	2SC1623L5	L5		GREEN
DTC144EK	26	2SC1623L6	L6		
DTC144WK	86	2SC2412K	B(Q-S)	DAP202K	
UN2112	6B	2SC2412KT-96R	BR	DSA010	W1
FA1F4M	M6	2SC2412KT-97R	BR	MA151A	MA
FMS2	S2	2SC2413KT-96PQ	A(PQ)	MA151K	MH
FMW2	W2	2SC2413KT-97PQ	A(PQ)	MA151WA	MN
2SA812M5	M5	2SC2712GL	L(GL)	MA151WK	MT
2SA812M6	M6	2SC2778C	KC	MA152A	MB
2SA1022C	EC	2SC2778BC	K(BC)	MA153	MC
2SA1036KT-96R	HR	2SC3395	BY	MA704	MIK
2SA1037K	F(Q-S)	2SC3735-T1BB33	B33	MA3075H	7.5H
2SA1037KT-96R	FR	2SC3735-T1BB34	B34	MA3075M	7.5M
2SA1365-TIG	AG	2SD601	Y(O-T)	RD3.9M-T1B	391
2SA1365-T2G	AG	2SD601Q	YQ	RD5.6M-T1B	561
2SA1462-T2BY33	Y33	2SD601R	YR	RD5.6M-T2B	561
2SA1464-T1BY12	Y12	2SD813R	QR	RD7.5M-T1B2	7.52
2SB624-T1BBV5	(BV1-BV5)	2SK198	10(P-R)	RD7.5M-T1B3	7.53
2SB624-T2BBV5	(BV1-BV5)	2SK198PQ	10(PQ)		
2SB709	A(O-T)	2SK621	30		
2SB709R	AR				
2SB709QR	A(QR)				
2SB710S	CS				

Imprinting	Ranking

Imprinting

Note ; () refers to Transistor rank.

- 2) Grasp the part with tweezers and melt the solder at the other side.



Fig. 4-2

- 3) Remove the part with a twisting motion.



Fig. 4-3

7. Removal (transistors, diodes, etc.):

- 1) Melt the solder of one lead.

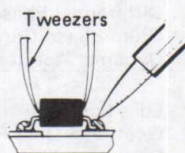


Fig. 4-4

- 2) Lift the side of that lead upward.

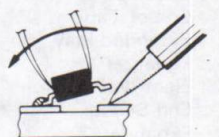


Fig. 4-5

- 3) Simultaneously heat solder of the two remaining leads and lift part to remove.

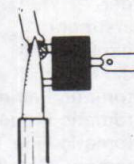


Fig. 4-6

8. Preheating (except for semiconductors):

Immediately before installing new resistors or capacitors, use a blower type hair dryer and preheat the part for about two minutes at approximately 150°C.

9. Replacement:

- 1) Presolder the contact points of the circuit pattern.

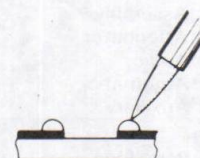


Fig. 4-7

- 2) Press the part downward with tweezers and apply the soldering pencil as indicated in the figure.

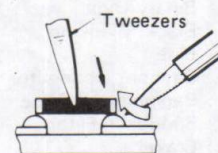


Fig. 4-8

4.3 POWER SUPPLY

Designation	Description
AL 9.6 V	Power supplied directly from battery or via DC jack.
AL 5 V	Obtained from AL 9.6 V through regulator IC1 of the 01 MAIN board.
SW 9.6 V	Obtained from AL 9.6 V which is controlled by the POWER switch and supplied via relay RY-1 of the 01 MAIN board.
SW 5 V (1)	Obtained from SW 9.6 V through regulator DC-DC convertor of the 01 MAIN board.
MOTOR 9.6 V	SW 9.6 V supplied to drum and capstan motors.
LOAD 9.6 V	SW 9.6 V supplied to mode control motor.
CA 9.6 V	Supplied the SW 9.6 V to camera.
EE 20 V	This is produced from CA 9.6 V by DC-DC convertor.
EE 15 V	This is produced from CA 9.6 V by DC-DC convertor.
EE 8 V	This is produced from CA 9.6 V by DC-DC convertor.
EE 9 V	This is produced from CA 9.6 V by DC-DC convertor.
SW 8 V (2)	CA 9.6 V rectified to 8 V by 24 EE & IND IC6.
SW 8 V (1)	CA 9.6 V rectified to 8 V by 28 REGULATOR Q1 and IC1.
SW 5 V (2)	CA 9.6 V rectified to 5 V by 28 REGULATOR DC-DC converter.

4.4 KEY TO ABBREVIATIONS

A	AC	: Alternating Current	COMP	: Comparator		
	ACC	: Automatic Color Control		: Composite		
	A/CTL	: Audio/Control		: Compensation		
	ADC	: Analog to Digital Converter	CONN	: Connector		
	ADD	: Adder	CONV	: Converter		
	ADJ	: Adjustment	CP	: Circuit Protector		
	A DUB	: Audio Dubbing		: Clamp Pulse		
	AE	: Audio Erase	CPC	: Capstan Phase Control		
	AEF	: Automatic Editing Function	CPU	: Central Processing Unit		
	AFC	: Automatic Frequency Control	CTC	: Crosstalk Cancel		
	AFT	: Automatic Fine Tuning	CTL	: Control		
	AGC	: Automatic Gain Control				
	AH	: Audio Head	D	D	: Drum, Digital, Diode, Drain	
	AHD	: Audio High Density Disk		DAC	: Digital to Analog Converter	
	AL	: After Loading		dB	: Decibel	
	ALC	: Automatic Light Compensation		DC	: Direct Current	
		: Automatic Level Control		DD	: Direct Drive	
	ALM	: Alarm		DEC	: Decoder	
	ALU	: Arithmetic Logic Unit		DEMOC	: Demodulator	
	AM	: Amplitude Modulation		DEMUX	: Demultiplexer	
	AMP	: Amplifier		DET	: Detector	
	ANT	: Antenna		DEV	: Deviation	
	APC	: Automatic Pedestal Control		DERS	: Drum Free Running Stop	
		: Automatic Phase Control	DG	: Differential Gain		
	APL	: Average Picture Level	DIF	: Differential		
	A/S/M	: Audio/Servo/Mechacon	DISCR	: Discriminator		
	ASS'Y	: Assembly	DL	: Delay Line		
	ATT	: Attenuator	DOC	: Dropout Compensator		
	AUD	: Audio	DOD	: Drop Out Detector		
	AUTO	: Automatic	DP	: Differential Phase		
	AUX	: Auxiliary	DPC	: Drum Phase Control		
			DYAC	: Dynamic Aperture Control		
	B	B	: Base, Blue	E	E	: Edit, Emitter
BAL		: Balance	EDP		: Electronic Data Processing	
BATT		: Battery	E-E		: Electric to Electric	
BBD		: Bucket Brigade Device	EF		: Emitter-Follower	
BCD		: Binary Coded Decimal	EMP		: Emphasis	
BEG		: Beginning	EN		: Enable	
BF		: Behind Focus	ENC		: Encoder	
BFP		: Burst Flag Pulse	ENV		: Envelope	
BIT		: Binary Digit	EOT		: End of Tape	
BLK		: Black, Blanking	EP		: Extended Play	
BLU		: Blue	EQ		: Equalizer	
BNC		: Bayonet Connector	ES	: Electronic Switch		
BOT		: Beginning of Tape	ESNS	: End Sensor		
BPF		: Bandpass Filter	EXP	: Expander		
BRK		: Brake	EXT	: External		
BRN		: Brown				
BRT		: Brightness	F	F	: Farad, Fuse	
BT		: Band Tuning		F ADV	: Frame Advance	
BUFF		: Buffer		FDP	: Fluorescent Display Panel	
BW or B/W		: Black and White		FE	: Full Erase	
				FET	: Field Effect Transistor	
		FF		: Fast Forward, Front Focus		
				: Flipflop		
		FG		: Frequency Generator		
		FM		: Frequency Modulation		
		FMA		: FM Audio		
		FR		: Full Recording, Frame, Fusible Resistor		
C	C	: Capacitance, Collector, Color	FREQ	: Frequency		
	CAL	: Calibration	F-V CONV	: Frequency to Voltage Converter		
	CAP	: Capstan, Capacitor	FWD	: Forward		
	CAR	: Carrier	FWD S	: Forward Search		
	CARR	: Carrier				
	CASS	: Cassette	G	G	: Green, Gate, Grid	
	CC	: Cassette Compartment		GEN	: Generator	
	CCD	: Charge Coupled Device		GND	: Ground	
	CCT	: Circuit		GRN	: Green	
	CdS	: Cadmium Sulphide		GRY	: Gray	
	CD	: Count Down				
	CE	: Chip Enable		H	H	: High, Henry, Hour
	CF	: Ceramic Filter, Color Frame, Correct Focus			HBF	: Horizontal Burst Flag
	CH	: Channel			HD	: Horizontal Drive
	CHG	: Charge			HG	: Hall Generator
	CHROMA	: Chrominance			HPF	: Highpass Filter
	CLK	: Clock	Hz		: Herz	
	CLR	: Clear				
	CMD	: Command				
	CMOS	: Complementary Metal Oxide Semiconductor				
	CNT	: Count, Counter				
	COL	: Color				
	COM	: Common				
	COMB	: Combination				
		: Comb Filter				

I	IC	: Integrated Circuit
	ID	: Identification (Pulse)
	IF	: Intermediate Frequency
	IFR	: Infrared
	IFT	: Intermediate Frequency Transformer
	IND	: Indicator
	INH	: Inhibit
	INS	: Insert
	INT	: Internal, Interrupt
	INV	: Inverter, Interleave
	I/O	: Input/Output
	IR	: Infrared

L	L	: Low, Left
	LCD	: Liquid Crystal Display
	LED	: Light Emitting Diode
	LIM	: Limiter
	LIN	: Linearity
	LLD	: Low Light Detector
	LOAD	: Loading (Cassette)
	LP	: Long Play
	LPF	: Lowpass Filter
	LSB	: Lower Sideband

M	M	: Motor, Mega
	MAX	: Maximum
	MDA	: Motor Drive Amplifier
	MECHACON	: Mechanism Control
	MIC	: Microphone
	MIN	: Minimum
	MIX	: Mixer, Mixing
	MMV	: Monostable Multivibrator
	MNOS	: Metal Nitride Oxide Semiconductor
	MOD	: Modulation, Modulator
	MODEM	: Modulator-Demodulator
	MON	: Monitor
	MOS	: Metal Oxide Semiconductor
	MPX	: Multiplexer, Multiplex
	MS	: Mode Select
	MUT	: Muting

N	NAND	: Not-And
	NC	: Not Connected, Normally Closed
	NFB	: Negative Feedback
	NLN	: Non-Linear
	NO	: Normally Open
	NOR	: Normal, Not-Or
	NR	: Noise Reduction

O	OP	: Operation
	OPAMP	: Operational Amplifier
	ORN	: Orange
	OSC	: Oscillator

P	PB	: Playback
	PC	: Photocoupler, Pulse Counter
	PCM	: Pulse Code Modulation
	PG	: Pulse Generator
	PGM	: Program
	PI	: Photo Interrupter
	PIF	: Picture Intermediate Frequency
	PLA	: Programmable Logic Array
	PLL	: Phase Locked Loop
	POS	: Position
	p-p	: Peak-to-Peak
	PR	: Pinch Roller
	PREAMP	: Preamplifier
	PRL	: Preroll
	P/S	: Pause/Still
	PSC	: Pulse Swallowing Control
	PU	: Pickup
	PUT	: Programmable Unijunction Transistor
	PWB	: Printed Wiring Board
	PWM	: Pulse Width Modulation
	PWR	: Power

Q	Q	: Quality Factor
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R	R	: Red, Right
	RA	: Resistor Array
	RAM	: Random Access Memory
	REC	: Recording
	REF	: Reference

REG	: Regulated, Regulator
REM	: Remote
REMOCON	: Remote Control (Unit)
REV	: Reverse
REV S	: Reverse Search
REW	: Rewind
RF	: Radio Frequency
ROM	: Read Only Memory
R/P	: Record/Playback
RPT	: Repeat
RS FF	: RS Flipflop
RST	: Reset
RT	: Rotary Transformer
RUN	: Running
RY	: Relay

S	SAW	: Sawtooth, Surface Acoustic Wave
	SC	: Subcarrier, Simulcast
	SCH	: Search
	SEL	: Select, Selector
	SENS	: Sensor
	SEP	: Separator
	SF	: Source Follower
	SFF	: Short Fast Forward
	SIF	: Sound Intermediate Frequency
	SN	: Signal to Noise Ratio
	SOL	: Solenoid
	SOS	: Sound on Sound
	SP	: Standard Play
	SR	: Supply Reel
	SREW	: Short Rewind
	S/S	: Slow/Still
	SSG	: Sync Signal Generator
	SSNS	: Start Sensor
	STD	: Strobe Data, Standard
	SUP	: Supply
	SW	: Switch
	SWD	: Switched
	SYNC	: Synchronization
	SYSCON	: System Control

T	TAL	: Tally
	TBC	: Time Base Corrector
	TC	: Tension Control, Time Code
	TEN	: Tension
	TF	: Thermal Fuse
	TIM	: Timing
	TK	: Tracking
	TNR	: Tuner
	TP	: Test Point
	TPZD	: Trapezoid
	TR	: Transistor, Trimmer
	TRANS	: Transformer
	T/T	: Tuner/Timer
	TU	: Take-up

U	UL	: Unloading -
	UNREG	: Unregulated
	UNSW	: Unswitched
V	V	: Vertical, Volt
	VACT	: Video Action
	VCO	: Voltage Controlled Oscillator
	VD	: Vertical Drive
	VIF	: Video Intermediate Frequency
	VLT	: Violet
	VR	: Variable Resistor
	VS	: Video and Sync
	VSCH	: Variable Search
	V/T	: Video/Television
	V/U	: VHF/UHF
	VXO	: Variable Crystal Oscillator

W	W	: Watt
	WARN	: Warning
	W & D	: White and Dark
	WHT	: White
	WV	: Working Voltage

X	XTAL	: Crystal
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Y	Y	: Luminance
	YEL	: Yellow

4.5.3 01 MAIN (AUDIO SECTION)

■ INTEGRATED CIRCUITS

IC NO.	MODE	SP PLAY	SP REC
IC301	①	2.4	2.3
	②	2.2	2.2
	③	2.3	2.2
	④	2.3	2.3
	⑤	2.3	2.3
	⑥	2.3	2.3
	⑦	2.4	2.4
	⑧	2.4	2.4
	⑨	2.4	2.5
	⑩	4.8	4.7
	⑪	2.4	2.3
	⑫	2.4	2.4
	⑬	0	0
	⑭	0	0.4
	⑮	0	0
	⑯	0	4.7
	⑰	2.4	2.3
	⑱	2.2	2.2
	⑲	4.7	4.7
	⑳	2.4	2.3
IC302	①	0	7.6
	②	0	7.6
	③	0	0
	④	0	3.3
	⑤	4.8	4.7
	⑥	0	0
	⑦	0	0

■ TRANSISTORS

TR NO.	SP PLAY			SP REC		
	E	C	B	E	C	B
Q301	—	—	—	—	—	—
Q302	0	3.8	0	0	0	3.3
Q303	0	0	3.8	0	4.7	0
Q304	0	0	4.6	0	4.6	0
Q305	0	0	0	0	0	0
Q306	0	0	0	0	0	0
Q307	0	0	0	0	0	0
Q308	0	4.7	0	0.4	4.7	0
Q309	4.7	0	4.7	4.7	0	4.7
Q310	8.0	0	8.0	8.0	7.8	0
Q311	0	8.0	0	0	0	3.3
Q312	0	0	0	7.9	7.7	0

4.5.4 01 MAIN (MECHACON SECTION)

■ INTEGRATED CIRCUITS

IC NO.	MODE	STOP	IC NO.	MODE	STOP	IC NO.	MODE	STOP
IC401	①	5.0	IC403	⑪	4.9	IC407	⑧	0.6
	②	4.9		⑫	4.9		⑨	0.2
	③	4.9		⑬	0		⑩	0
	④	4.9		⑭	4.9		⑪	0
	⑤	4.9		⑮	4.5		⑫	2.5
	⑥	4.9		⑯	4.9		⑬	3.0
	⑦	4.9		⑰	4.9		⑭	0
	⑧	4.9		⑱	4.9	IC408	①	0
	⑨	4.9		⑲	4.9		②	0
	⑩	0		⑳	5.0		③	0
	⑪	4.8	IC404	①	4.9		④	5.0
	⑫	0		②	0		⑤	0
	⑬	4.9		③	4.9		⑥	5.0
	⑭	0		④	0		⑦	0
	⑮	4.9		⑤	4.9		⑧	4.5
	⑯	4.9		⑥	0		⑨	0
	⑰	4.9		⑦	4.9		⑩	5.0
	⑱	3.1		⑧	0		⑪	4.9
	⑲	5.1		⑨	4.9		⑫	5.0
	⑳	4.8		⑩	0		⑬	4.7
	㉑	0		⑪	0.6		⑭	5.0
	㉒	0		⑫	0	IC409	①	0.7
	㉓	4.9		⑬	0.3		②	5.0
	㉔	5.0		⑭	0		③	0.7
	㉕	0		⑮	5.1		④	5.0
	㉖	4.9		⑯	4.9		⑤	0
	㉗	4.9		⑰	4.7		⑥	5.0
	㉘	4.9		⑱	4.9		⑦	0
	㉙	4.9		⑲	4.9		⑧	0
	㉚	0		⑳	5.0		⑨	4.4
	㉛	4.9	IC405	①	4.9		⑩	0
	㉜	0		②	4.6		⑪	4.7
	㉝	0		③	4.9		⑫	5.0
	㉞	0		④	4.6		⑬	0
	㉟	0		⑤	4.9		⑭	5.0
	㊱	4.8		⑥	4.5	IC410	①	5.0
	㊲	5.0		⑦	4.9		②	0
	㊳	0		⑧	4.6		③	5.0
	㊴	4.7		⑨	4.9		④	0
	㊵	5.0		⑩	0		⑤	4.2
	㊶	0		⑪	5.1		⑥	4.2
	㊷	0		⑫	4.9		⑦	0
	㊸	4.7		⑬	0		⑧	0
	㊹	0		⑭	4.9		⑨	4.5
	㊺	0		⑮	5.1		⑩	5.0
	㊻	0		⑯	4.9		⑪	5.0
	㊼	4.7		⑰	5.1		⑫	0
	㊽	0		⑱	4.9		⑬	0
	㊾	0		⑲	4.9		⑭	5.0
	㊿	0		⑳	5.0	IC411	①	0
	1	0	IC406	①	0		②	0
	2	0		②	0		③	0
	3	4.9		③	0		④	0
	4	5.1		④	0		⑤	5.0
	5	4.9		⑤	0		⑥	4.5
	6	1.8		⑥	0		⑦	4.5
	7	1.3		⑦	10.5		⑧	0
	8	0		⑧	10.5		⑨	5.0
	9	0		⑨	0		⑩	5.0
	10	0		⑩	0		⑪	5.0
IC403	①	4.9	IC407	①	0		⑫	5.0
	②	5.1		②	3.1		⑬	5.0
	③	4.9		③	2.6		⑭	5.0
	④	5.0		④	5.1			
	⑤	4.9		⑤	0			
	⑥	5.1		⑥	2.6			
	⑦	4.8		⑦	0			
	⑧	4.9						
	⑨	4.9						
	⑩	0						

TRANSISTORS

TR NO.	MODE		
	E	C	B
Q402	0	10.5	0
Q403	0	4.9	0
Q404	0	8.0	0
Q405	0	3.3	0
Q406	0	0	4.8
Q407	0	0	5.0
Q408	0	0	4.9
Q409	0	4.5	0
Q410	0	0	4.7
Q411	0	5.0	0
Q412	0	10.5	0
Q413	10.5	0	10.5

4.5.5 01 MAIN

CONNECTORS

CN NO.	MODE			
	STOP	SP PLAY	LP PLAY	SP REC
CN1 ①	10.5	10.4	—	—
②	0	0	—	—
③	0	0	—	—
CN2 ①	—	0	—	7.6
②	—	0	—	7.6
CN3 ①	—	0	—	0
②	—	0	—	0
CN4 ①	—	0	—	0
②	—	0	—	0
③	—	0	—	0
④	—	5.1	—	5.1
CN5 ①	—	5.1	5.1	—
②	—	0	0	—
③	—	2.6	2.6	—
④	—	6.8	6.8	—
⑤	—	4.8	4.8	—
⑥	—	0	0	—
⑦	—	0	0	—
CN6 ①	—	0	0	—
②	—	0	0	—
CN7 ①	—	0	0	—
②	—	0	0	—
③	—	2.7	3.4	—
④	—	3.1	0	—
⑤	—	0	0	—
⑥	—	3.0	3.4	—
⑦	—	2.9	2.9	—
⑧	—	0	0	—

CN NO.	MODE			
	STOP	SP PLAY	LP PLAY	SP REC
CN8 ①	—	3.1	3.1	—
②	—	0	0	—
③	—	8.0	8.0	—
④	—	5.1	5.1	—
⑤	—	5.1	5.1	—
⑥	—	0	0	—
⑦	—	0	0	—
⑧	—	0	0	—
⑨	—	0	0	—
⑩	—	0	0	—
CN9 ①	—	4.9	4.9	—
②	—	4.8	4.8	—
③	—	0	0	—
④	—	4.9	4.9	—
⑤	—	4.9	4.9	—
⑥	—	4.9	4.9	—
⑦	—	0	0	—
⑧	—	0	0	—
⑨	—	0	0	—
⑩	—	0	0	—
⑪	—	4.9	4.9	—
⑫	—	5.1	0	—
⑬	—	5.1	5.1	—
⑭	—	5.1	5.1	—
⑮	—	4.6	4.6	—
⑯	—	4.6	4.6	—
CN10A ①	—	4.9	4.9	—
②	—	4.9	4.9	—
③	—	4.9	4.9	—
④	—	4.9	4.9	—
⑤	—	0	0	—
CN10B ①	—	0	0	—
②	—	0	0	—
③	—	0	0	—
④	—	0	0	—
⑤	—	0	0	—
⑥	—	0	0	—
⑦	—	0	0	—
CN11 ①	—	0	0	—
②	—	5.1	5.1	—
③	—	0	0	—
④	—	4.9	4.9	—
⑤	—	2.7	2.7	—
⑥	—	0	0	—
⑦	—	0	0	—
⑧	—	0	0	—
⑨	—	8.0	8.0	—
⑩	—	0	0	—
CN12 ①	—	3.0	3.1	—
②	—	0	0	—
③	—	0	0	—
④	—	0	0	—
⑤	—	0	0	—
⑥	—	0	0	—
⑦	—	0	0	—
⑧	—	0	0	—
⑨	—	0	0	—
⑩	—	3.1	3.1	—

4.5.6 0 2 Y/C

CONNECTORS

MODE CN NO.	STOP	SP PLAY	LP PLAY	SP REC
CN13 ①	—	0	0	—
②	—	0	0	—
③	—	0	0	—
④	—	0	0	—
⑤	—	0	0	—
⑥	—	0	0	—
⑦	—	0	0	—
CN14 ①	—	0	0	—
②	—	0	0	—
CN15 ①	—	0	0	—
②	—	0	0	—
③	—	0	0	—
CN16 ①	—	0	0	—
②	—	0	0	—
CN17 ①	—	0	0	—
②	—	0	0	—
③	—	0	0	—
④	—	2.5	2.5	—
⑤	—	2.5	2.5	—
CN18 ①	0	—	—	—
②	0	—	—	—
③	10.5	—	—	—
④	0	—	—	—
⑤	8.1	—	—	—
⑥	4.6	—	—	—
⑦	0	—	—	—
⑧	0	—	—	—
⑨	5.1	—	—	—
⑩	0	—	—	—
⑪	0	—	—	—
⑫	0	—	—	—
⑬	0	—	—	—
⑭	0	—	—	—
CN19 ①	5.1	—	—	—
②	0	—	—	—
③	5.1	—	—	—
④	0	—	—	—
CN20 ①	0	—	—	—
②	0	—	—	—
③	0	—	—	—
④	2.2	—	—	—
CN21 ①	0	—	—	—
②	0	—	—	—
③	0	—	—	—

INTEGRATED CIRCUITS

MODE IC NO.	SP PLAY	LP PLAY	SP REC	LP REC
IC1 ①	2.3	2.7	1.7	2.2
②	0.4	0.4	0	0
③	2.7	2.7	2.2	2.7
④	2.8	2.8	2.8	2.8
⑤	2.1	2.2	2.4	2.4
⑥	3.0	0	3.0	3.0
⑦	1.3	1.3	1.3	0
⑧	1.5	1.5	1.5	1.5
⑨	0	0	0	0
⑩	1.9	2.0	1.9	1.9
⑪	0	0	0	0
⑫	2.6	2.6	4.5	4.5
⑬	2.5	2.4	0.4	0.4
⑭	3.0	3.0	0.7	0.6
⑮	3.6	3.6	3.2	3.2
⑯	3.0	2.7	2.7	2.7
⑰	4.1	4.1	4.0	4.0
⑱	4.1	4.1	4.0	4.0
⑲	2.6	2.6	0	2.7
⑳	1.9	1.9	1.9	1.9
㉑	0	2.0	2.0	2.0
㉒	2.0	0	2.1	2.0
㉓	4.8	4.8	4.9	4.0
㉔	3.7	3.9	4.0	3.3
㉕	0.5	1.9	0.5	0
㉖	2.9	3.1	3.1	3.1
㉗	1.7	2.3	0	2.3
㉘	1.3	1.3	0	0
IC2 ①	3.4	3.4	0	0
②	1.3	1.3	0	0
③	0	0	0	0
④	1.8	0	1.7	0
⑤	1.8	1.8	0	0
⑥	4.7	4.7	0	0
⑦	3.3	3.3	0	0
⑧	3.5	3.5	0	0
⑨	2.8	2.8	0	0
⑩	3.5	3.5	0	0
IC3 ①	2.7	2.7	0	0
②	3.2	3.2	0	0
③	3.4	3.4	0	0
④	1.3	1.3	0	0
⑤	2.4	2.4	0	0
⑥	0	0	0	0.1
⑦	1.8	1.8	0	0
⑧	4.7	4.7	0	0
⑨	3.3	3.3	0	0
⑩	3.5	3.5	0	0
⑪	2.8	2.8	0	0
⑫	3.5	3.5	0	0
⑬	3.5	3.5	0	0
⑭	3.5	3.5	0	0
⑮	0	0.8	0	0
⑯	0	1.2	0	0
⑰	0	0	0	0
⑱	0	2.1	0.1	0
⑲	0	2.1	0.1	0.1
㉑	0	0	0	0
㉒	3.6	3.6	0	0
㉓	3.2	0	0	0
㉔	4.7	4.7	0	0
㉕	3.1	3.1	0	0
㉖	1.8	1.8	0	0
㉗	3.1	3.1	0	0
㉘	3.5	3.5	0	0
㉙	4.7	4.7	0	0

Note: Voltage at every part of 0 2 Y/C board was measured with a digital voltmeter (DC range) with the following input signals:

- 1) Color bars in REC mode
- 2) In PB mode, playback of the alignment tapes of MH-C2 (color bars segment in SP mode) and CH-C5L (in LP mode).

MODE	SP PLAY	LP PLAY	SP REC	LP REC
IC NO.				
IC4 ①	1.2	1.2	0	0
②	0.6	0.8	0	0
③	0	0	0	0
④	0	0.8	0	0
⑤	3.5	3.5	0	0
⑥	3.5	3.5	0	0
IC5 ①	0	0	0	0
②	5.0	5.0	5.0	5.0
③	4.2	4.2	4.2	4.2
④	0	0	0	0
⑤	0.1	4.8	0	4.9
⑥	0	0	0	0
⑦	0	4.8	0	0
⑧	3.0	0	5.0	5.0
⑨	4.6	0	4.6	0.4
IC6 ①	0	0	0	0
②	2.7	2.7	2.7	2.7
③	2.8	2.8	2.8	2.8
④	0	0	5.0	5.0
⑤	1.3	1.3	1.3	1.3
⑥	1.2	1.2	1.2	1.2
⑦	0	0	0	0
⑧	4.8	4.8	4.8	4.8
⑨	2.3	2.2	2.2	2.2
⑩	0	0	0	0
⑪	4.8	5.0	4.8	4.8
⑫	3.2	3.1	3.2	3.1
⑬	0	0	0	0
⑭	3.1	3.0	3.0	0
⑮	0	0	0	0
⑯	0.2	0.2	0.2	0.2
⑰	4.3	4.3	0	0
⑱	2.8	3.0	2.8	2.8
⑲	7.9	7.9	7.9	7.9
⑳	4.9	4.9	0	0.1
㉑	2.8	2.8	2.8	2.8
㉒	2.8	2.8	2.8	2.8
㉓	3.5	3.5	3.6	3.6
㉔	0.7	3.2	3.0	3.1
㉕	3.0	3.0	3.2	3.2
㉖	2.7	2.7	2.9	2.9
㉗	0	2.7	2.9	2.9
㉘	3.4	3.4	3.5	3.5
IC7 ①	0	0	0	0
②	3.5	3.6	0.2	0.2
③	3.3	3.4	3.2	3.2
④	4.9	4.9	0	0
⑤	5.0	5.0	0	5.0
⑥	4.2	4.2	4.2	4.2
IC8 ①	0	0	8.0	8.0
②	8.1	8.1	8.1	8.1
③	4.3	4.3	0.1	0.1
④	0	0	0	0
⑤	4.9	4.9	0	0
⑥	0	0	5.0	5.0
⑦	0	0	5.0	5.0
⑧	0	4.9	0	0
⑨	5.0	5.0	5.0	5.0

MODE	SP PLAY	LP PLAY	SP PLAY	LP PFAY
IC NO.				
IC9 ①	5.0	4.7	4.9	5.0
②	0	0	0	0
③	5.0	5.0	5.0	5.0
④	3.5	3.5	0.1	0.1
⑤	0	0	0	0
⑥	2.8	2.9	2.8	2.8
⑦	2.2	2.3	2.1	2.1
⑧	0	4.8	0	0
⑨	0	0	0	0
⑩	2.7	2.7	2.6	2.6
IC10 ①	2.7	2.7	2.4	2.4
②	0	0	0	0
③	0	0	0	0
④	0	0	0	0
⑤	5.0	5.0	5.0	5.0
⑥	0	0	0	0
⑦	3.0	3.0	0	0
⑧	2.6	2.6	2.6	2.8
⑨	2.7	2.7	2.7	2.7
⑩	0.1	0.2	0	0.2
⑪	4.9	4.9	0	0
⑫	0	0	0.3	0
⑬	0	0.3	0	0
⑭	0.4	0.4	0.4	0.4
⑮	3.9	3.9	3.9	3.9
⑯	0	0	0	0
⑰	2.9	2.9	2.9	2.9
⑱	3.2	3.2	2.7	2.7
⑲	0	0	0	0
㉑	0	0	0	0
㉒	0	0	5.0	5.0
㉓	0	0	0	0
㉔	0	0	0	0
㉕	1.3	1.3	1.3	1.3
㉖	2.8	2.8	2.8	2.8
㉗	2.0	2.5	2.6	2.3
㉘	2.5	2.5	2.6	2.6
㉙	3.5	3.5	0.1	0.1
IC11 ①	2.6	2.6	2.8	2.8
②	1.0	2.2	2.2	2.2
③	0	0	0	0
④	0	0	0	0
⑤	4.9	4.9	5.0	5.0
⑥	1.2	1.2	1.4	1.4
⑦	0	0	0	0
⑧	2.6	2.6	2.8	2.8

MODE	SP PLAY			LP PLAY			SP REC			LP REC		
TR NO.	E	C	B	E	C	B	EE	C	B	E	C	B
Q1	0	2.7	1.9	0	2.5	2.3	0	2.4	2.3	0	2.6	2.0
Q2	0	1.5	0.4	0	1.5	0.4	0	1.5	0.4	0	1.5	0.4
Q3	1.4	3.2	2.6	1.4	3.2	2.0	0	3.2	2.0	1.4	3.2	2.0
Q4	2.6	4.9	3.2	2.6	4.9	0	2.6	4.9	3.2	2.6	5.0	3.2
Q5	0	3.3	0.4	0	3.3	0.4	0	3.3	0.4	0	3.3	0.4
Q6	0	0.1	3.3	0	0.1	3.3	0	0.1	3.3	0	0.1	3.3
Q7	0	0.1	0.1	0	0	4.8	0	0.1	0.1	0	0	4.9
Q8	0	0	4.6	0	0.1	0.1	0	0	4.6	0	0.2	0.4
Q9	1.8	4.8	2.3	1.7	4.8	2.3	1.7	4.8	2.3	1.8	4.8	2.3
Q10	—	—	—	—	—	—	—	—	—	—	—	—
Q11	0	0	0.1	0.3	0.3	1.0	0	0	0.1	0	0	0.1
Q14	2.4	3.1	5.0	2.4	3.1	0	1.9	2.7	5.0	2.0	2.7	5.0

CONNECTORS

CN NO.	MODE	SP PLAY	LP PLAY	SP REC	LP REC
CN1	①	0	0	0	0
	②	0	0.7	0.5	0
CN2	①	0	0	0	0
	②	0	0	0	0
CN3	①	0	0	0	0
	②	5.1	5.1	5.1	5.1
	③	0	0	5.0	5.0
	④	4.9	4.9	0	0
	⑤	2.7	4.3	0	0
	⑥	0	0	0	0
	⑦	0	0	0	0
	⑧	0.4	0.4	0.4	0.4
	⑨	8.0	8.0	8.0	8.0
	⑩	0	0	0	0
CN4	①	3.0	3.0	2.9	2.9
	②	0	0	0	0
	③	0	0	0	0
	④	0	0	0	0
	⑤	0	0	5.0	5.0
	⑥	0	0	5.0	5.0
	⑦	4.6	0	4.6	0.4
	⑧	2.4	1.9	2.4	1.7
	⑨	0	0	0	0
	⑩	3.0	3.1	2.9	3.0
CN5	①	0	0	0	0
	②	2.3	2.3	2.4	2.4
	③	2.6	2.6	2.6	2.4
	④	0	0	0	0
	⑤	0	0	0	0
	⑥	5.6	5.6	5.5	5.5
	⑦	0	0	4.1	4.1
	⑧	5.0	5.0	5.0	0
	⑨	2.4	2.4	2.0	2.0
	⑩	4.2	4.2	4.2	4.2
	⑪	2.5	2.5	2.6	2.6
	⑫	3.2	3.2	3.2	3.2

4.5.7 03 OPERATION

INTEGRATED CIRCUITS

IC NO.	MODE	STOP	IC NO.	MODE	STOP
IC1	①	4.9	IC2	①	4.9
	②	4.9		②	4.9
	③	3.7		③	4.9
	④	3.7		④	4.9
	⑤	3.6		⑤	4.9
	⑥	3.7		⑥	4.9
	⑦	4.8		⑦	4.9
	⑧	0		⑧	0
	⑨	0		⑨	0
	⑩	3.6		⑩	0
	⑪	0		⑪	4.9
	⑫	0		⑫	5.0
	⑬	0		⑬	4.9
	⑭	0		⑭	4.9
	⑮	4.9		⑮	4.9
	⑯	5.0		⑯	4.9

Note: Voltage at every part of 03 OPERATION board was measured with a digital voltmeter (DC range).

TRANSISTOR

TR NO.	MODE	STOP		
		E	C	B
Q1		0	0	4.8
Q2		—	—	—
Q3		0	0	0
Q4		0	0	0
Q5		0	4.9	0
Q6		—	—	—
Q7		5.1	0	4.6
Q8		0	8.0	0

CONNECTORS

CN No.	MODE	STOP	CN No.	MODE	STOP	CN No.	MODE	STOP
CN1	①	0	CN2	①	4.9	CN3	①	0
	②	0		②	4.8		②	3.1
	③	8.0		③	0		③	0
	④	5.1		④	4.9		④	4.9
	⑤	5.1		⑤	0		⑤	3.1
	⑥	0		⑥	4.9		⑥	3.1
	⑦	0		⑦	0		⑦	0
	⑧	0		⑧	0		⑧	3.1
	⑨	0		⑨	0		⑨	0
	⑩	4.7		⑩	0		⑩	0
				⑪	4.9			
				⑫	5.1			
				⑬	5.1			
				⑭	5.1			
				⑮	4.6			
				⑯	4.6			

4.5.8 0 5 MDA

■ INTEGRATED CIRCUITS

MODE IC NO.	STOP	SP PLAY
IC251 ①	1.0	1.0
②	2.4	2.4
③	2.3	2.4
④	3.7	1.3
⑤	3.8	3.7
⑥	2.0	1.9
⑦	2.0	1.9
⑧	2.0	1.9
⑨	0	2.4
⑩	5.1	5.0
⑪	2.0	1.9
⑫	0	2.2
⑬	0	0
⑭	0.8	0
⑮	1.2	2.5
⑯	0	2.5
⑰	0	0
⑱	0	2.4
⑲	3.0	6.4
⑳	0	2.5
㉑	0	0.9
㉒	3.5	1.4
㉓	5.0	4.1
㉔	0.9	1.0

■ CONNECTORS

MODE CN NO.	STOP	SP PLAY
CN-M1 ①	2.3	2.3
②	1.0	1.0
③	2.3	2.3
④	0.2	0.3
⑤	0.9	1.0
⑥	3.8	3.7
⑦	4.4	4.4
⑧	3.7	3.7
⑨	0	2.6
⑩	0	2.5
⑪	0	2.4
⑫	2.0	1.9
⑬	2.0	1.9

4.5.9 1 2 SKEW JUMP

■ INTEGRATED CIRCUITS

MODE IC NO.	SP PLAY	LP PLAY	SP REC	LP REC	STOP
IC1 ①	2.0	2.0	2.0	2.0	2.0
②	2.9	3.0	0.1	0	3.1
③	3.4	3.4	3.4	0	3.4
④	0	0	4.8	0	0
⑤	3.1	3.1	3.1	3.1	3.1
⑥	2.4	2.4	2.4	2.4	2.4
⑦	0	0	0	0	0
⑧	0	0	2.5	0	0.1
⑨	0	0	0	0	0
⑩	0	3.2	3.2	3.2	3.2
⑪	3.4	3.4	3.4	3.4	3.4
⑫	3.2	3.2	3.2	3.2	3.2
⑬	3.2	0	3.2	3.2	3.2
⑭	4.8	4.8	4.8	4.8	4.8
⑮	4.8	4.8	4.8	4.8	4.8
⑯	0	4.8	1.5	4.8	4.8
⑰	2.8	3.1	4.8	4.8	4.8
⑱	4.1	4.1	4.1	0.1	0.1
⑲	2.4	2.4	2.4	2.5	2.5
⑳	2.4	2.4	0	2.4	2.4
㉑	2.4	2.4	2.4	2.4	2.4
㉒	0.8	0.8	0.8	0.8	0.8
IC2 ①	8.9	8.9	8.9	8.9	2.8
②	0	0	0	0	2.2
③	4.9	4.9	5.0	5.0	0
④	3.3	3.3	3.3	3.3	0
⑤	3.0	3.0	3.1	3.1	2.8
⑥	0	2.3	2.3	2.3	0
⑦	1.6	1.6	1.6	1.6	1.4
⑧	4.8	4.8	4.8	4.8	5.0
IC3 ①	2.6	2.6	2.6	2.6	2.6
②	2.2	1.7	1.6	1.6	1.6
③	3.2	3.1	3.2	3.2	3.2
④	0	0	0	0	0
⑤	3.1	3.1	3.1	3.1	3.2
⑥	4.9	4.9	4.9	4.9	5.0
⑦	3.5	3.5	3.5	3.5	3.5

Note: Voltage at every part of 1 2 SKEW JUMP board was measured with a digital voltmeter (DC range) with the following input signals:

- 1) Color bars in REC mode
- 2) In PB mode, playback of the alignment tapes of MH-C2 (color bars segment in SP mode) and CH-C5L (in LP mode)

■ TRANSISTORS

MODE TR NO.	SP PLAY			LP PLAY			SP REC			LP REC			STOP		
	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Q1	1.7	4.8	2.3	1.7	4.8	2.3	1.8	4.8	2.4	1.8	4.8	2.4	1.8	4.8	2.4
Q2	2.8	4.8	3.4	2.8	4.8	3.4	2.7	0	3.4	2.7	4.8	3.4	2.8	4.8	3.4
Q3	1.0	3.9	1.6	1.0	3.8	1.6	1.0	3.9	1.6	1.0	3.9	1.6	1.0	3.8	1.6
Q4	3.2	4.8	3.8	3.2	4.8	3.8	3.2	4.8	3.9	3.2	4.8	3.9	3.2	4.8	3.9
Q5	5.6	8.9	6.2	5.6	8.9	6.2	5.6	8.9	6.2	5.6	8.9	6.2	5.6	8.9	6.2
Q6	2.6	6.2	0	0.4	6.2	3.4	2.7	6.2	3.3	2.7	6.2	3.3	2.7	6.7	3.3
Q7	6.1	3.4	5.5	6.1	3.3	5.5	6.1	3.3	5.5	6.1	3.3	5.5	6.1	3.3	5.5
Q8	2.7	8.9	3.3	2.7	8.9	3.2	2.5	8.9	3.3	2.6	8.9	3.3	2.7	8.9	3.3
Q9	4.1	3.3	4.7	4.1	8.9	4.7	4.1	0	4.7	4.1	8.9	4.7	4.1	8.9	4.7
Q10	1.8	2.0	2.4	1.7	2.0	2.4	1.3	2.8	2.0	1.3	2.8	2.0	1.4	2.8	2.0
Q11	0.6	0	0	0	0.6	0	0	0.6	0	0	0.6	0	0	0	0.6
Q12	1.7	3.8	2.1	1.7	3.8	2.3	1.7	3.8	2.3	1.7	3.8	2.3	1.7	3.8	1.9
Q13	1.7	4.8	2.3	1.7	4.8	2.3	0	4.8	2.3	1.7	4.8	2.3	1.6	4.8	2.3
Q14	0.8	4.8	1.4	0.8	4.8	1.4	0.8	4.8	1.4	0.8	4.8	1.4	0.8	4.8	1.4

4.5.10 1 3 END ALARM

■ INTEGRATED CIRCUITS

IC NO.	MODE	SP PLAY	LP PLAY	SP REC	LP REC	STOP
IC1	①	0	2.8	0	0	5.0
	②	0	5.0	0	3.5	5.0
	③	0	3.3	0	2.5	2.1
	④	5.1	5.0	5.1	0	0
	⑤	4.0	0	1.0	2.3	2.8
	⑥	2.7	0	3.0	0	3.0
	⑦	2.4	2.3	2.9	2.5	2.6
	⑧	0	0	0	0	0
	⑨	0	2.5	2.5	2.5	0
	⑩	5.0	5.0	5.0	5.0	5.0
	⑪	0	0	0	0	0
	⑫	0	0	0	0	0
	⑬	5.1	5.0	0	0	0
	⑭	0	5.0	0	0	5.0
	⑮	0	0	0	0	0
	⑯	5.1	5.0	5.0	5.1	5.0
IC2	①	0	0	5.0	5.1	5.0
	②	5.1	0	5.1	5.1	5.0
	③	3.4	3.0	2.7	1.6	3.6
	④	1.0	3.7	0	2.5	3.3
	⑤	0	5.0	4.8	0	0
	⑥	2.5	0	0	5.1	0
	⑦	0	0	0	0	0
	⑧	5.1	0	0	5.1	5.0
	⑨	5.0	5.0	5.0	5.0	0
	⑩	5.1	0	5.0	3.3	0
	⑪	0	0	1.5	5.1	5.0
	⑫	0	0	0	0	0
	⑬	5.0	5.0	5.0	5.0	5.0
	⑭	5.1	5.0	5.1	5.1	5.0
IC3	①	0	0	0	0	0
	②	0	0	0	0	0
	③	5.1	5.0	0	5.1	5.1
	④	5.0	5.0	0	4.8	5.0
	⑤	0	0	5.1	0	5.1
	⑥	5.0	5.0	0	4.8	5.0
	⑦	0	0	0	0	0
	⑧	0	0	0	0	0
	⑨	0	5.0	5.1	5.1	5.1
	⑩	0	0	0	0	0
	⑪	5.1	0	0	0	0
	⑫	5.1	0	0	5.1	5.1
	⑬	5.0	0	0	0	0
	⑭	5.1	5.0	5.1	5.1	5.1
IC4	①	0	0	0	0	0
	②	2.8	2.2	2.7	2.3	2.1
	③	5.1	5.0	5.0	5.1	5.1
	④	3.9	1.4	4.1	1.4	3.4
	⑤	4.3	0	0	3.3	4.8
	⑥	0	0	0	0	0
	⑦	0	0	0	0	0
	⑧	0	0	0	0	0
	⑨	5.1	0	5.1	0.1	2.2
	⑩	5.1	3.5	0	0.5	5.1
	⑪	0	0	5.1	0	5.1
	⑫	5.1	0	0	5.1	0
	⑬	5.1	0	5.1	5.1	5.1
	⑭	5.1	5.0	5.1	5.1	5.1

IC NO.	MODE	SP PLAY	LP PLAY	SP REC	LP REC	STOP
IC5	①	0	0	0	0	0
	②	5.1	5.0	5.1	5.1	0
	③	0	5.0	5.1	5.1	0
	④	0	0	0	0	0
	⑤	5.1	5.0	5.1	5.1	5.1
	⑥	5.1	5.0	5.1	5.1	0
	⑦	0	0	0	0	0
	⑧	0	0	0	0	0
	⑨	0	0	0	0	0
	⑩	5.1	5.0	5.1	0	5.1
	⑪	5.1	5.0	5.1	5.1	5.1
	⑫	0	0	0	0	0
	⑬	0	5.0	1.9	5.1	0
	⑭	5.1	0	5.1	0	5.1
	⑮	0	0	5.1	0	0
	⑯	5.1	5.1	5.1	5.1	5.1
IC6	①	0	0	0	0	0
	②	0	0	0	0	0
	③	5.1	5.0	5.1	5.1	5.1
	④	0	3.3	0	5.1	5.1
	⑤	0	5.0	4.2	5.1	5.1
	⑥	5.1	0	5.1	0	0
	⑦	0	0	0	0	0
	⑧	0	0	0	0	5.1
	⑨	0	5.0	0	5.1	5.1
	⑩	0	0	0	0	0
	⑪	5.1	5.0	0	5.1	5.1
	⑫	0	0	0	0	0
	⑬	0.6	0.6	4.3	1.0	0.6
	⑭	5.1	5.0	5.1	5.1	5.1
IC7	①	0	0	0	0	0
	②	0	0	0	0	0
	③	0	0	0	0	0
	④	0	0	0	0	0
	⑤	0	0	0	0	0
	⑥	0	0	0	0	0
	⑦	0	0	0	0	0

■ TRANSISTORS

TR NO.	MODE			SP PLAY			LP PLAY			SP REC			LP REC			STOP		
	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B	E	C	B
Q1	0	0	4.3	0	0	4.3	0	5.0	0.1	0	5.0	0.1	0	0	4.3			
Q2	5.1	0	5.0	5.1	0	5.0	5.1	0	5.0	5.1	0	5.0	5.1	0	5.0			
Q3	0	5.0	0.6	0	5.0	0.6	0	0	4.3	0	4.8	1.0	0	5.0	0.6			

■ CONNECTORS

CN NO.	MODE	SP PLAY	LP PLAY	SP REC	LP REC	STOP
CN1	①	5.1	5.1	5.1	5.1	5.1
	②	5.1	5.1	5.1	5.1	5.1
	③	5.0	5.0	5.0	5.0	5.0
	④	4.3	4.3	0.1	0.1	4.3
	⑤	4.6	0.1	4.6	0.4	0.1
	⑥	0	5.0	0	5.0	0
	⑦	5.1	5.0	5.1	0	0
	⑧	0	0	0	0	0

Note: Voltage at every part of 1 3 END ALARM board was measured with a digital voltmeter (DC range) with the following input signals:

1) Color bars in REC mode

2) In PB mode, playback of the alignment tapes of MH-C2 (color bars segment in SP mode) and CH-C5L (in LP mode).

4.5.11 2 1 IMAGER (1)

■ INTEGRATED CIRCUITS

IC NO.	MODE	STOP	E-E
IC1	①	0.2	0
	②	0	0
	③	0	0
	④	0	0
	⑤	0.9	10.7
	⑥	0	0
	⑦	0.1	2.2
	⑧	0.1	0.6
	⑨	0	0
	⑩	0	0
	⑪	0	0
	⑫	0	0.1
	⑬	0	0
	⑭	0	-2.5
	⑮	0	0
	⑯	0	0
	⑰	0	0
	⑱	0	-0.6
	⑲	0	0
	⑳	0	18.2
IC2	①	0.2	4.9
	②	0.2	3.4
	③	0	0
	④	0	0
	⑤	0.1	0
	⑥	0	0
	⑦	0.1	2.7
	⑧	0	0
	⑨	0	2.7
IC3	①	0	0
	②	0	1.0
	③	0	0
	④	0	1.2
	⑤	0	3.7
	⑥	0	9.1
	⑦	0	3.0
	⑧	0	0

■ TRANSISTORS

TR NO	MODE			STOP			E-E		
	E	C	B	E	C	B	E	C	B
Q1	0	0	0	18.2	18.8	18.8			
Q2	0	0	0	10.1	14.9	10.7			
Q3	0	0	0	10.1	4.3	10.1			
Q4	0	0.2	0	0	4.2	0.1			
Q5	0	0.2	0.1	2.7	4.9	3.4			
Q6	0	0	0.1	0.4	3.7	1.6			
Q7	0	0.2	0.2	3.0	4.9	3.6			

■ CONNECTORS

CN NO.	MODE	STOP	E-E
CN-11	①	0	-8.0
	②	0	15.1
	③	0	9.0
	④	0.2	5.0
	⑤	0	19.6
	⑥	0	
CN-12	①	0	2.4
	②	0	0

4.5.12 2 2 IMAGER (2)

■ INTEGRATED CIRCUITS

IC NO.	MODE	STOP	E-E
IC4	①	0	-4.3
	②	0	-0.1
	③	0	0
	④	0	0
	⑤	0	-6.8
	⑥	0.2	5.0
	⑦	0	0
	⑧	0	0
	⑨	0	0
	⑩	0	0
	⑪	0	4.8
	⑫	0	5.0
	⑬	0	0
	⑭	0	0
	⑮	0	0
	⑯	0	12.1
	⑰	0	0
	⑱	0	0
	⑲	0	0
	⑳	0	-6.8
IC5	①	0.2	4.6
	②	0.2	0
	③	0.2	0
	④	0.2	2.0
	⑤	0.1	4.7
	⑥	0.1	0
	⑦	0.1	4.7
	⑧	0.1	0
	⑨	0.1	0
	⑩	0	0
	⑪	0.1	0
	⑫	0	0
	⑬	0.1	4.9
	⑭	0	0
IC7	①	0.2	1.7
	②	0.2	0
	③	0	2.5
	④	0.1	2.0
	⑤	0.1	2.3
	⑥	0	2.5
	⑦	0	0
	⑧	0	4.9
	⑨	0	0
	⑩	0	4.9
	⑪	0	0
	⑫	0.1	2.4
	⑬	0.1	1.7
	⑭	0.2	5.0
IC8	①	0.1	1.7
	②	0.2	1.7
	③	0	1.8
	④	0.1	1.7
	⑤	0.1	1.7
	⑥	0.2	3.2
	⑦	0	0
	⑧	0.2	0.1
	⑨	0.2	1.6
	⑩	0.2	1.6
	⑪	0.1	0.1
	⑫	0.1	1.6
	⑬	0.1	1.6
	⑭	0.2	5.0
IC9	①	0	0
	②	0	0
	③	0	0
	④	0	0
	⑤	0	0
	⑥	0	0
	⑦	0	0
	⑧	0	0
	⑨	0	0
	⑩	0	0
	⑪	0	0
	⑫	0	0
	⑬	0	0
	⑭	0	0
	⑮	0	0
	⑯	0	0
	⑰	0	0
	⑱	0	0

■ TRANSISTORS

TR NO.	MODE			STOP			E-E		
	E	C	B	E	C	B	E	C	B
Q8	0	0	0	-7.2	-8.0	-7.8			
Q9	0	0	0	12.1	14.9	12.7			
Q11	0	0	0	-7.8	-7.2	-7.2			

Note: Voltage at every part of 2 1 IMAGER (1), 2 2 IMAGER (2), 2 3 VIDEO, 2 4 E-E & IND, 2 6 CONTROL, 2 7 PAL SUB boards was measured with a digital voltmeter (DC range) with input signals supplied from a camera picking up the gray scale pattern.

CONNECTORS

MODE CN NO.	STOP	E-E
CN-13 ①	0	0
②	0	0
③	0	0
④	0	0
⑤	0	4.5
⑥	0	5.0
⑦	0	4.8
⑧	0	0
⑨	0	0
⑩	0	4.8
⑪	0	0
⑫	0	0
CN-14 ①	0	2.5
②	0	0
③	0	2.5
④	0	0

MODE IC NO.	STOP	E-E
IC5 ①	0	9.0
②	0	1.6
③	0	4.7
④	0	0
⑤	0	0
⑥	0	0.1
⑦	0	3.1
IC6 ①	0	0
②	0	0
③	0	1.7
④	0.8	2.4
⑤	0.3	2.2
⑥	0	1.9
⑦	0	1.9
⑧	0	0
⑨	0.9	2.7
⑩	0	0
⑪	0	2.0
⑫	0	0
⑬	0	2.0
⑭	0	2.0
⑮	0	2.0
⑯	0	2.1
⑰	0	2.4
⑱	0	2.0
⑲	0	2.1
⑳	0	4.9
㉑	0	0.1
㉒	0	0.4
㉓	0	2.8
㉔	0	2.2
㉕	0	2.1
㉖	0	2.5
㉗	0.4	2.9
㉘	0	2.5
㉙	0	0
㉚	0	0
㉛	0	0
㉜	0	0
IC6 ㉝	0	4.9
㉞	0	1.7
㉟	0	2.1
㊱	0	1.8
㊲	0	3.3
㊳	0	3.1
㊴	0	1.9
㊵	0	1.8
㊶	0	0
㊷	0	1.8
㊸	0	1.8
㊹	0	1.8
IC7 ①	0	2.6
②	0	1.4
③	0	2.1
④	0.8	2.6
⑤	0	3.0
⑥	0	0
⑦	0	3.0
⑧	0.5	2.7
⑨	0	3.8
⑩	0	2.4
⑪	0	2.2
⑫	0	9.0
⑬	0	2.9
⑭	0	4.9
⑮	0	1.4
⑯	0	3.4
⑰	0	0.9
⑱	0	4.1
⑲	0	3.5
㉑	0	0.7
㉒	0	4.6
㉓	0	2.7
㉔	0	1.4
㉕	0	2.2
㉖	0	2.2
㉗	0	2.5

4.5.13 2 3 VIDEO

INTEGRATED CIRCUITS

MODE IC NO.	STOP	E-E
IC1 ①	0	0
②	0.1	0
③	0.1	0
④	0.1	0
⑤	0	0
⑥	0	0
⑦	0.1	0
⑧	0.1	0
⑨	0	0
⑩	0.1	0
⑪	0.1	0.3
⑫	0.1	0
⑬	0.1	0
⑭	0	0
⑮	0.1	0
⑯	0.1	0
⑰	0	0
⑱	0.1	0
⑲	0.1	0
㉑	0	0
㉒	0.4	0
㉓	0.2	0
㉔	0.2	0
㉕	0	0
㉖	0	0
㉗	0	0
㉘	0.1	0
㉙	0	0
㉚	0	0
㉛	0	0
㉜	0	0
㉝	0.1	0
㉞	0.1	0
㉟	0	0
㊱	0	0
㊲	0.2	0
㊳	0	0
㊴	0.1	0
㊵	0	0
㊶	0	0
㊷	0.1	0
IC2 ①	0	4.9
②	0	2.5
③	0	2.6
④	0	5.0
⑤	0	2.4
⑥	0	2.4
⑦	0	0
⑧	0	0.1
⑨	0	5.0
⑩	0	4.9
⑪	0	0
⑫	0	0
⑬	0	4.9
⑭	0	4.9
IC3 ①	0.4	1.6
②	0	0
③	0	0.9
④	0	2.9
⑤	0	4.9
⑥	0.4	2.8
⑦	0	0
⑧	0	0
⑨	0.6	1.2
⑩	0	0
⑪	0	0
⑫	0	0
⑬	0	0
⑭	0	0
⑮	0	0
⑯	0	0
⑰	0	0
⑱	0	0
㉑	0	0
㉒	0	0
㉓	0	0
㉔	0	2.5

TRANSISTORS

MODE TR NO.	STOP			E-E		
	E	C	B	E	C	B
Q1	0	0	0	2.1	5.0	2.4
Q2	0	0	0	2.1	5.0	2.4
Q3	0	0	0	2.4	4.9	2.4
Q4	0	0	0	1.5	3.8	1.8
Q5	0	0	0	3.7	4.9	3.8
Q6	0	0	0	3.1	4.9	3.6
Q7	0	0	0	1.3	0	0.6
Q8	0	0	0	1.3	0.3	0.7
Q9	0	0	0	1.9	1.3	0
Q10	0	0	0	1.3	0	0.7
Q11	0	0	0	2.4	4.9	3.0
Q12	0	0	0	1.4	4.9	2.2
Q13	0	0	0	1.0	4.0	0.5
Q14	0	0	0	1.7	0	1.0
Q15	0	0	0	2.3	4.9	3.0
Q16	0	0	0	1.5	4.9	2.2
Q17	0	0	0	1.5	4.1	2.2
Q18	0	0	0	3.4	4.9	4.0
Q19	0	0	0	1.3	4.9	2.0
Q20	0	0	0	2.5	4.9	3.2
Q21	0	0	0	2.6	4.9	3.2
Q22	0	0	0	1.6	4.9	2.2
Q23	—	—	—	—	—	—
Q24	0	0	0	0.2	0.1	0.2
Q25	0	0	0	1.2	1.2	3.6

CONNECTORS

CN No.	MODE	STOP	E-E
CN-V1	①	0	0
	②	0	0
	③	0	4.8
	④	0	0
	⑤	0	0
	⑥	0	4.8
	⑦	0	5.0
	⑧	0	4.5
	⑨	0	0.5
	⑩	0	0
	⑪	0	2.7
	⑫	0	0
CN-V2	①	0	0
	②	0	2.5
	③	0	0
	④	0	2.2
CN-V3	①	0	0
	②	0	2.9
CN-V4	①	0	0.5
	②	0	0
	③	0	0
	④	0	4.5
	⑤	7.6	7.5
	⑥	0	0
	⑦	0	0
	⑧	0	1.2
	⑨	0.4	3.4
	⑩	0.6	1.1
CN-V5	①	0	0
	②	0	2.1
	③	0	2.1
	④	0	0
CN-V6	①	0	3.6
	②	0	3.4
	③	0	9.0
	④	2.4	2.2
	⑤	0	5.0
	⑥	0	3.4
	⑦	0	1.9
	⑧	0	1.9
	⑨	2.7	2.7
	⑩	0	0

IC No.	MODE	STOP	E-E
IC3	④	8.0	8.0
	⑤	0	2.5
	⑥	0	2.6
	⑦	0	0.6
	⑧	1.7	4.3
	⑨	0	2.9
	⑩	0	2.9
	⑪	0	0
	⑫	4.0	4.0
	⑬	4.0	4.0
	⑭	6.2	3.5
IC4	①	4.8	4.8
	②	0	0
	③	0	0
	④	0	0
	⑤	0	0
	⑥	0	0
	⑦	0	0
	⑧	0	0
IC5	①	0	0.5
	②	0	4.5
	③	0	0
	④	0	4.8
	⑤	0	1.2
	⑥	0	3.8
	⑦	0	0
	⑧	0	0
	⑨	0.9	5.0
	⑩	0	4.9
	⑪	0	0
	⑫	0	5.0
	⑬	0	0
	⑭	0	5.0
IC6	①	10.1	10.0
	②	0	0
	③	5.1	5.0

4.5.14 2 4 E-E & IND

INTEGRATED CIRCUITS

IC No.	MODE	STOP	E-E
IC1	①	0	0
	②	0	0
	③	0.9	4.6
	④	0	4.8
	⑤	0	4.5
	⑥	0	4.5
	⑦	4.6	2.6
	⑧	4.6	2.7
	⑨	4.6	4.2
	⑩	4.6	3.5
	⑪	4.6	4.2
	⑫	0	0
	⑬	4.6	4.3
	⑭	0	0
	⑮	1.1	4.7
	⑯	0	0
	⑰	4.6	4.3
	⑱	0	0
	⑲	0	4.8
	⑳	0	0
	㉑	0	0
	㉒	0.9	4.3
	㉓	4.6	4.2
	㉔	4.6	4.2
	㉕	4.6	4.2
	㉖	4.6	4.3
	㉗	4.6	4.2
	㉘	0	0
	㉙	0	0
	㉚	0	0
	㉛	0	0
	㉜	3.7	3.7
	㉝	0	0
	㉞	4.1	4.1
	㉟	0	0
	㊱	0	0
	㊲	5.1	0
	㊳	5.0	5.1
IC2	①	0	0
	②	0	3.1
	③	0.1	2.2
	④	0	2.6
	⑤	0.2	3.1
	⑥	0.2	1.0
	⑦	0	0
	⑧	0	2.6
	⑨	0	2.7
	⑩	0	2.7
	⑪	0	0
	⑫	0	2.6
	⑬	0	4.9
	⑭	0	2.6
	⑮	0	3.1
	⑯	0	0
	⑰	0	2.9
	⑱	0	2.3
	⑲	0	0
	㉑	0	2.5
	㉒	0	3.4
	㉓	0	3.6
	㉔	0	0
	㉕	0	3.2
	㉖	0	0.6
	㉗	0	2.9
	㉘	0	0
IC3	①	6.8	6.7
	②	0.6	1.1
	③	1.6	1.6

TRANSISTORS

TR No.	STOP			E-E		
	E	C	B	E	C	B
Q1	4.6	4.6	0	4.3	4.6	5.0
Q2	—	—	—	—	—	—
Q3	0	0	0	1.9	1.6	1.8
Q4	0	0	0	1.2	4.9	1.9
Q5	0	0	0	0	0	0.5
Q6	0	7.6	0.8	0	7.7	1.9
Q7	0	0	0	1.4	3.7	1.9
Q8	0	0	0	3.2	4.9	3.6
Q9	0	0	0	1.6	4.9	2.2
Q10	0	0	0	2.2	4.9	2.9
Q11	0	0	0	5.0	2.7	1.7
Q12	0	0	0	2.7	0	2.1
Q13	0	0	0	1.9	2.1	0

CONNECTORS

CN No.	MODE	STOP	E-E
CN-E2	①	0	0
	②	0	2.5
	③	0	2.5
	④	0	0
CN-E3	①	0	4.0
	②	0	3.5
	③	0	9.0
	④	2.4	2.2
	⑤	0.2	5.0
	⑥	0	3.4
	⑦	0.1	0
	⑧	0	0
	⑨	2.8	2.6
	⑩	0	0
CN-E4	①	0	0
	②	0	0
	③	0	0
	④	0	4.5
	⑤	7.6	0
	⑥	0	0
	⑦	0	0
	⑧	0	3.4
	⑨	0.5	0
	⑩	0.6	1.2
CN-E5	①	5.1	1.3
	②	0	0
	③	8.0	8.0
	④	0	5.0
	⑤	0	0
	⑥	0	0
	⑦	0	0

MODE CN No.	STOP	E-E	MODE CN No.	STOP	E-E
CN-E6 ①	1.1	5.1	CN-E13 ①	0	0
②	5.1	5.0	②	0	4.9
③	5.1	0	③	10.1	9.8
④	5.1	5.1			
⑤	10.1	10.0	CN-E14 ①	0	0
⑥	0	0	②	0	5.0
CN-E10 ①	0.2	2.8	③	8.0	8.0
②	1.7	4.5	④	10.4	10.2
③	0.2	2.8	⑤	0	9.0
④	6.3	3.7	⑥	0	0
CN-E11 ①	0	0	⑦	7.9	7.8
②	0	0	⑧	1.1	4.9
CN-E12 ①	0	0			
②	0	0	CN-E15 ①	0	4.9
③	0	0	②	0	0

TRANSISTORS

MODE TR NO.	STOP			E-E		
	E	C	B	E	C	B
Q701	0	0	0	1.5	7.2	2.1
Q702	0	0	0	8.3	9.0	9.0

CONNECTORS

MODE CN NO.	STOP	E-E
CN-C1 ①	4.5	4.2
②	4.5	4.2
③	4.5	4.2
④	4.5	4.2
⑤	0	1.8
⑥	0	0
⑦	0	0
⑧	0	5.0
⑨	0	0
⑩	0.9	5.0
⑪	0	9.0
⑫	7.9	7.8
⑬	0	5.0
⑭	2.7	2.8
⑮	2.4	2.1
CN-C3 ①	0	0
②	0	0
③	0	6.9

4.5.15 2 6 CONTROL

INTEGRATED CIRCUITS

MODE IC NO.	STOP	E-E
IC701 ①	0.6	3.4
②	0.3	1.5
③	0.3	1.7
④	0.3	1.6
⑤	0.3	3.5
⑥	0.5	1.8
⑦	0	0
⑧	0	1.4
⑨	0	1.6
⑩	0.6	0
⑪	0.7	0.5
⑫	1.4	1.3
⑬	2.1	0
⑭	1.5	1.4
⑮	2.1	1.7
⑯	2.7	2.7
⑰	2.9	2.8
⑱	4.3	1.6
⑲	5.1	5.1
⑳	7.9	7.8
㉑	4.9	4.9
㉒	4.8	4.8
㉓	2.6	2.3
㉔	2.4	2.1
㉕	1.8	1.8
㉖	0	0
㉗	0	0
㉘	0.9	5.0
㉙	1.6	1.6
㉚	0	3.1
㉛	0	0
㉜	0	3.0
㉝	0	3.0
㉞	-0.1	3.0
㉟	0	6.9
㊱	0	3.0
㊲	0	0
㊳	0	0
㊴	0	0
㊵	0	4.9
㊶	0	5.0
㊷	0	5.0
㊸	0	0.9
㊹	-0.1	0.7
㊺	0	1.6
㊻	0	3.3
㊼	0.4	2.1
㊽	0.3	2.0

4.5.16 2 8 REGULATOR

INTEGRATED CIRCUITS

MODE IC NO.	STOP	E-E
IC1 ①	9.1	8.7
②	0	0
③	1.2	1.2
IC2 ①	0	-8.0
②	0	0
③	0	-9.6

TRANSISTOR

MODE TR. NO.	STOP			E-E		
	E	C	B	E	C	B
Q1	10.1	9.4	8.0	9.7	9.0	9.0

CONNECTORS

MODE CN NO.	STOP	E-E
CN-R1 ①	0	19.6
②	0	0
③	0	15.1
④	0	9.1
⑤	0	0
⑥	-0.4	-9.7
CN-R2 ①	0	-8.0
②	0	15.1
③	0	9.0
④	0.2	5.0
⑤	0	19.6
⑥	0	0
CN-R3 ①	0	4.9
②	0.2	7.8
③	0	0
④	0	9.0
⑤	0	0
⑥	0	8.0
⑦	8.0	0
⑧	1.0	0

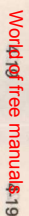
4.5.17 2 9 PAL SUB

TRANSISTOR

MODE TR NO.	STOP					E-E				
	E1	E2	C1	C2	B	E1	E2	C1	C2	B
Q1024	0.1	0	0	0	0	3.2	3.1	2.6	0	2.6

CONNECTOR

MODE CN NO.	STOP	E-E
CN-P1 ①	0	3.1
②	0	0
③	0	0
④	0	0
⑤	0.2	4.9
⑥	0	0



4.7 SERVO & MDA BLOCK DIAGRAMS

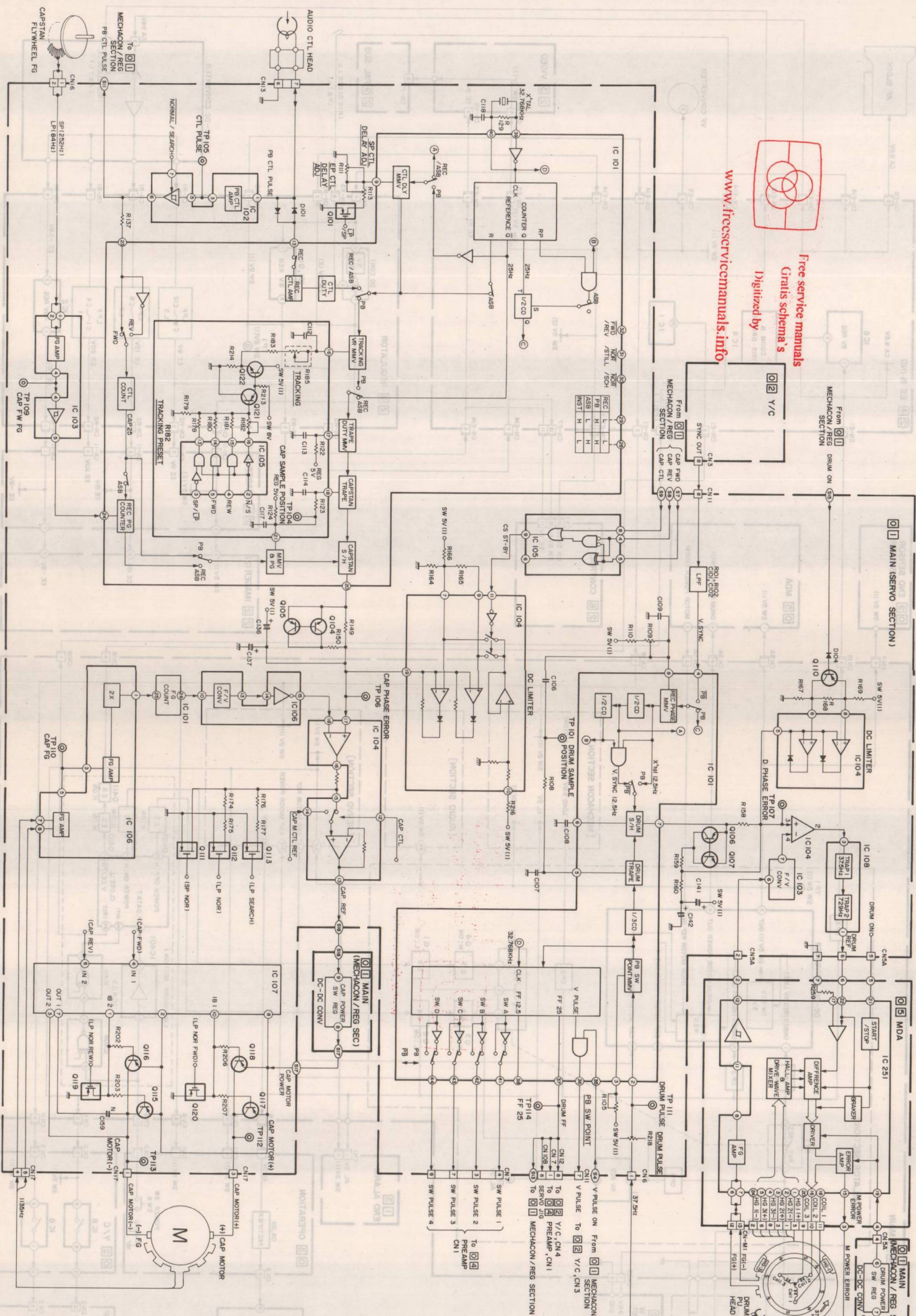
11/11/2012

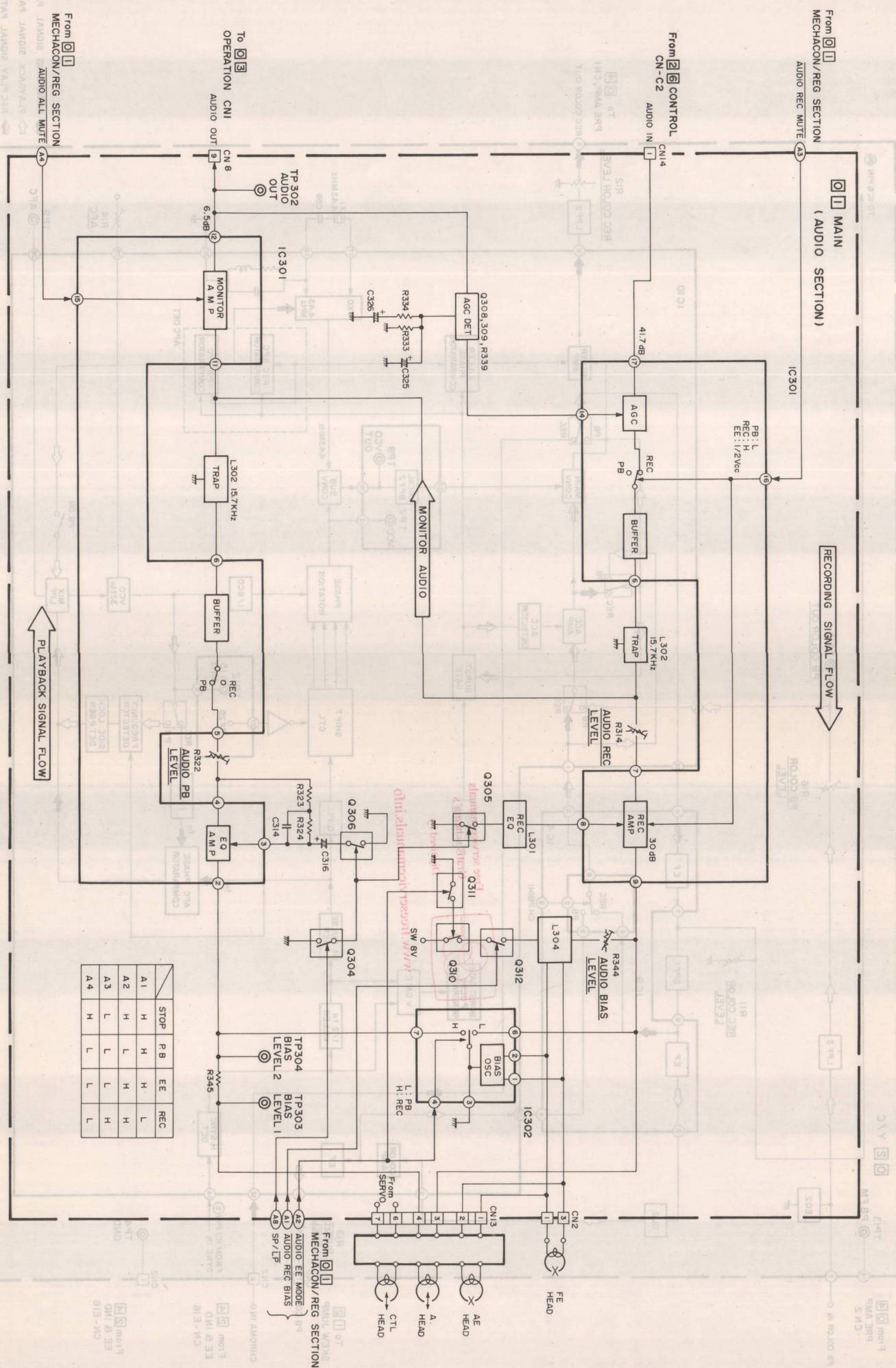
www.nostatech.nl

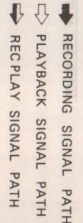


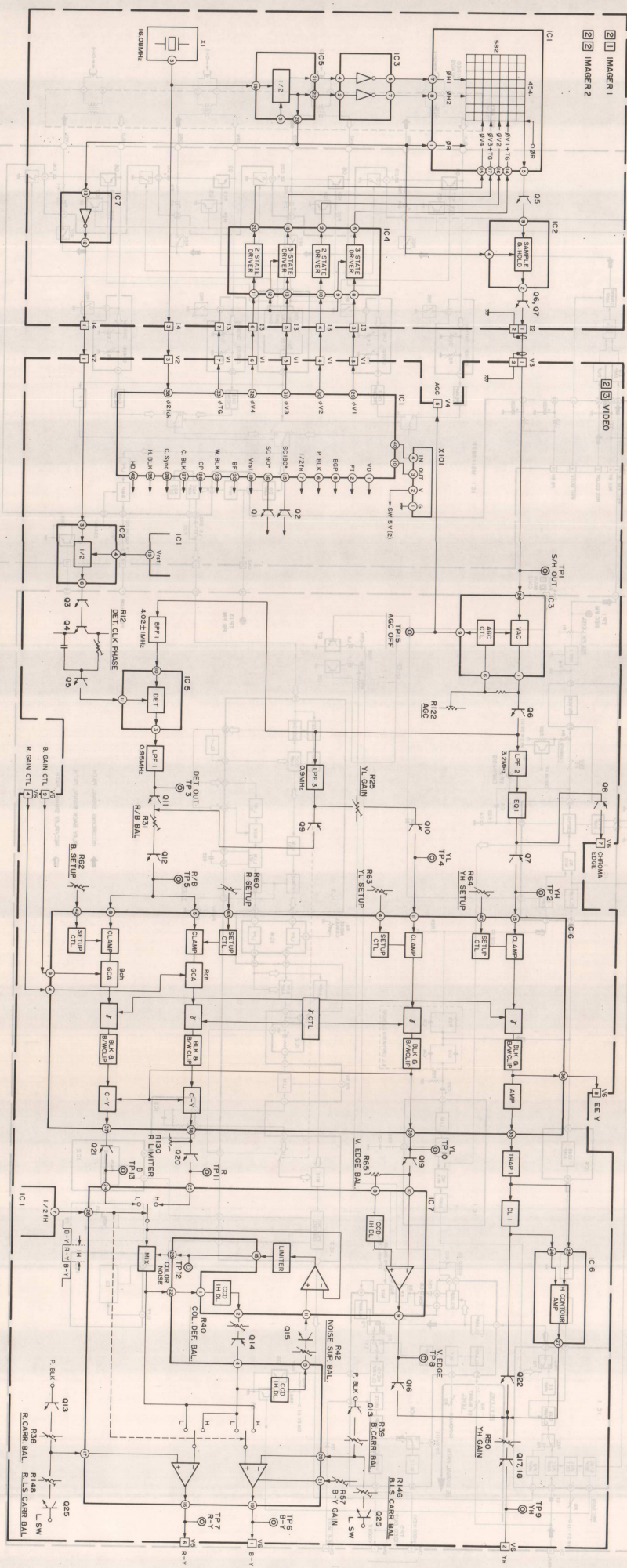
www.freeservicemanuals.info

Digitized by

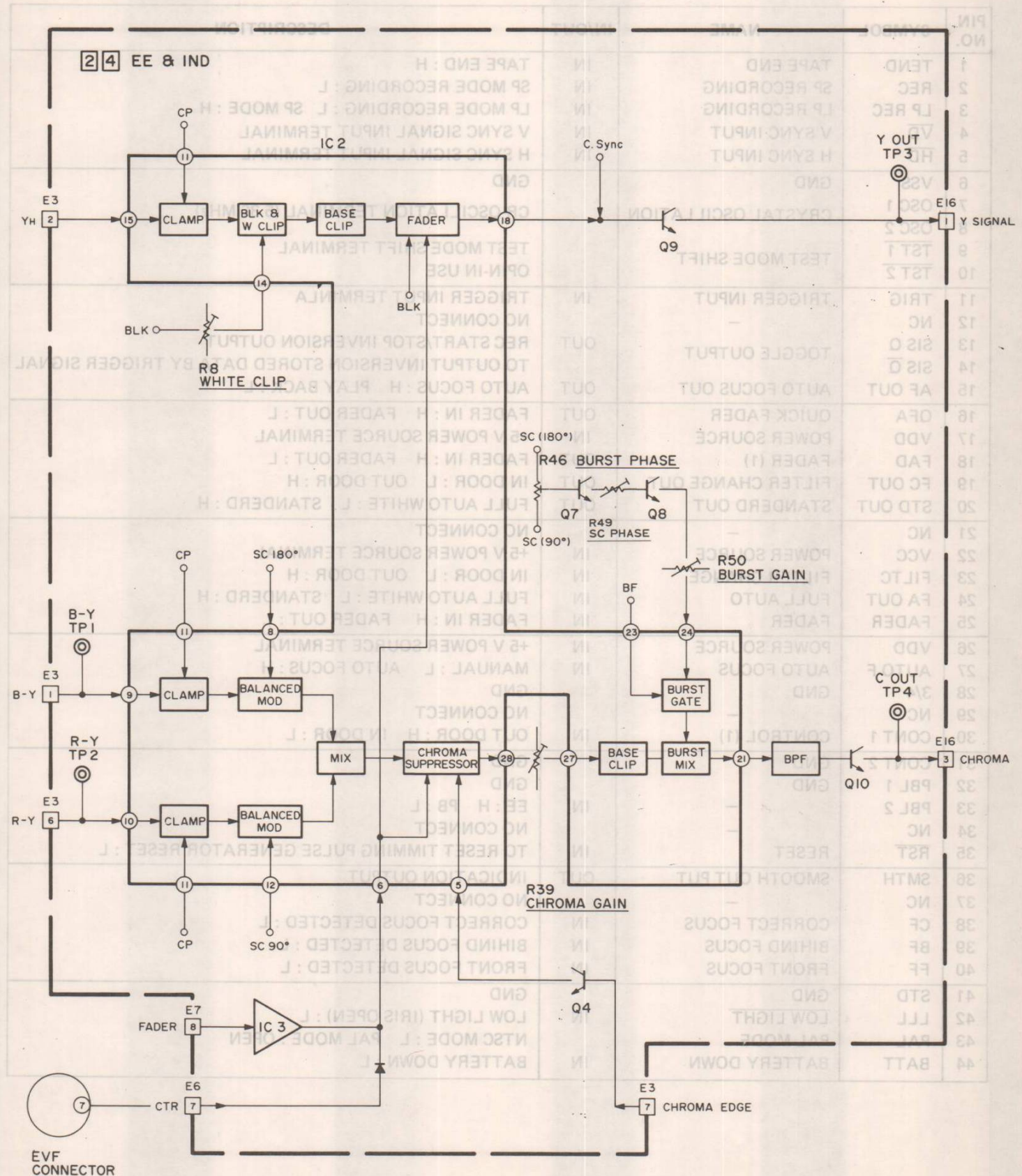
Free service manuals
Circuit schematics







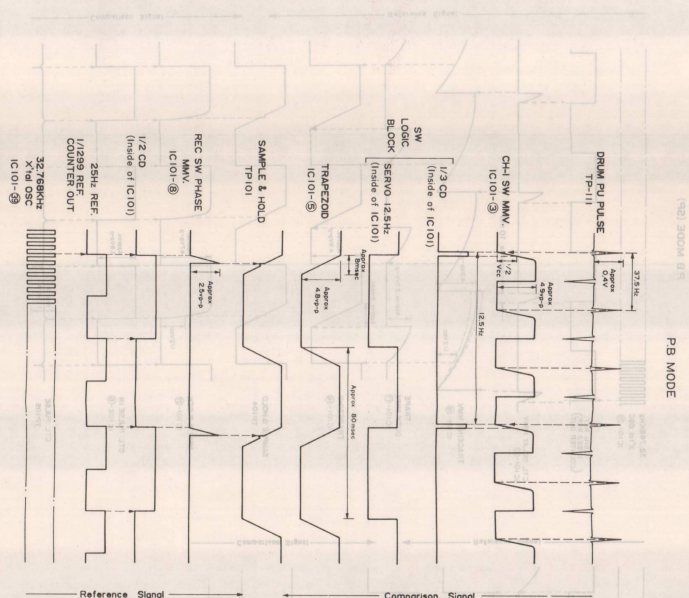
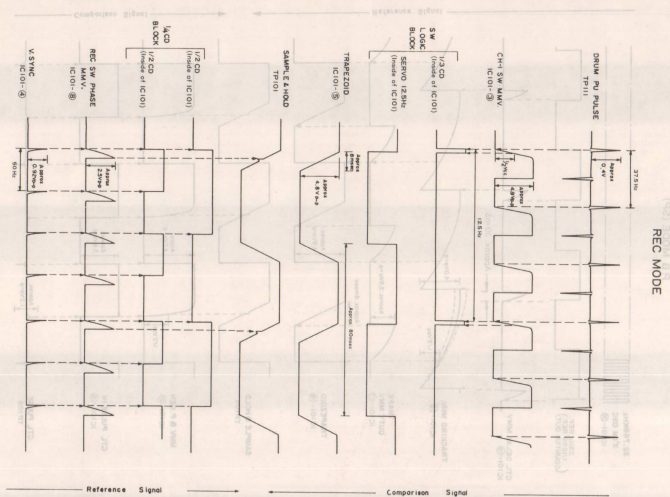
4.12 EE & IND BLOCK DIAGRAM



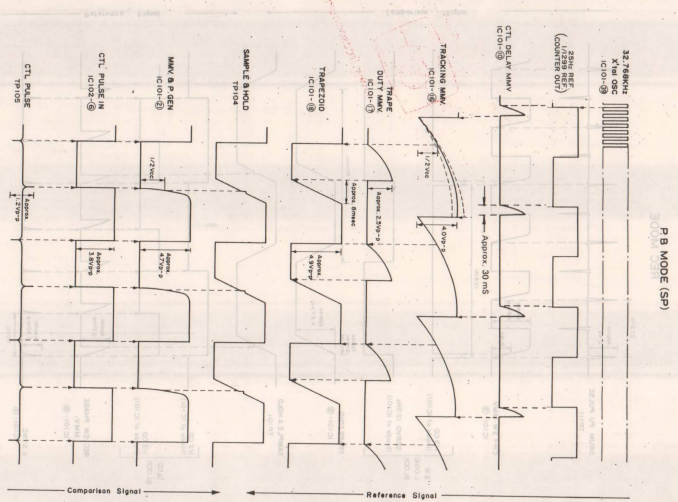
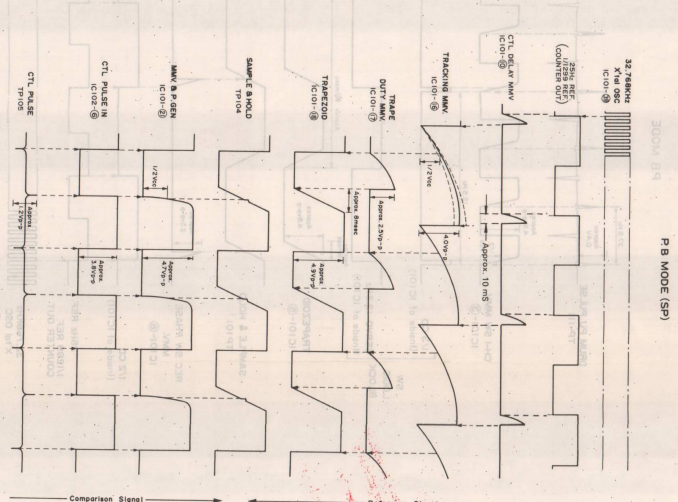
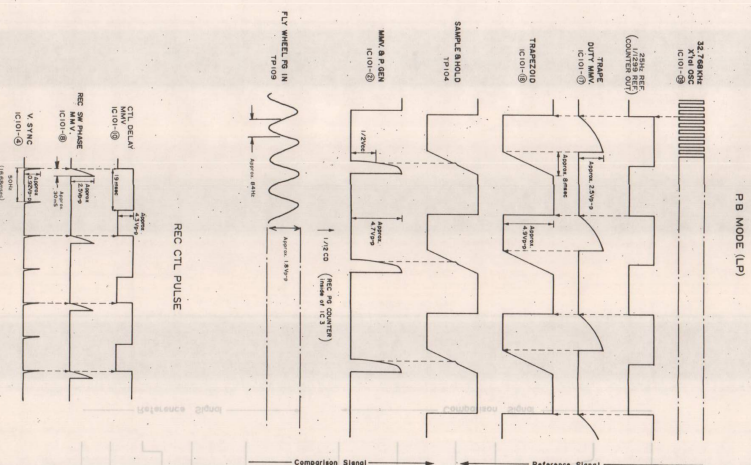
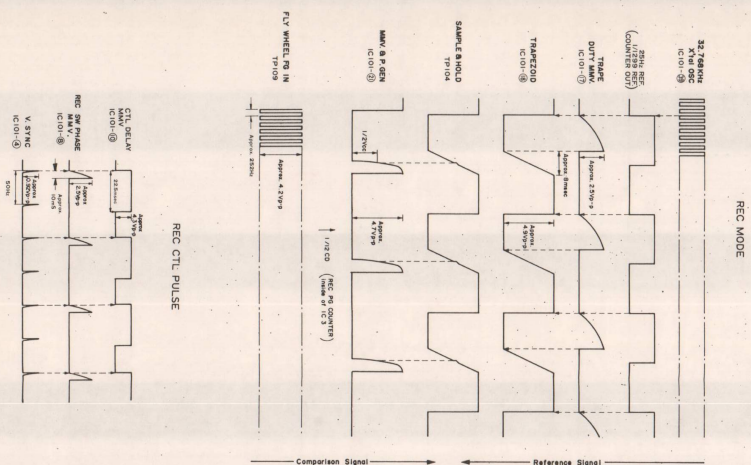
4.13 2 4 EE & IND IC1 SPECIFICATIONS

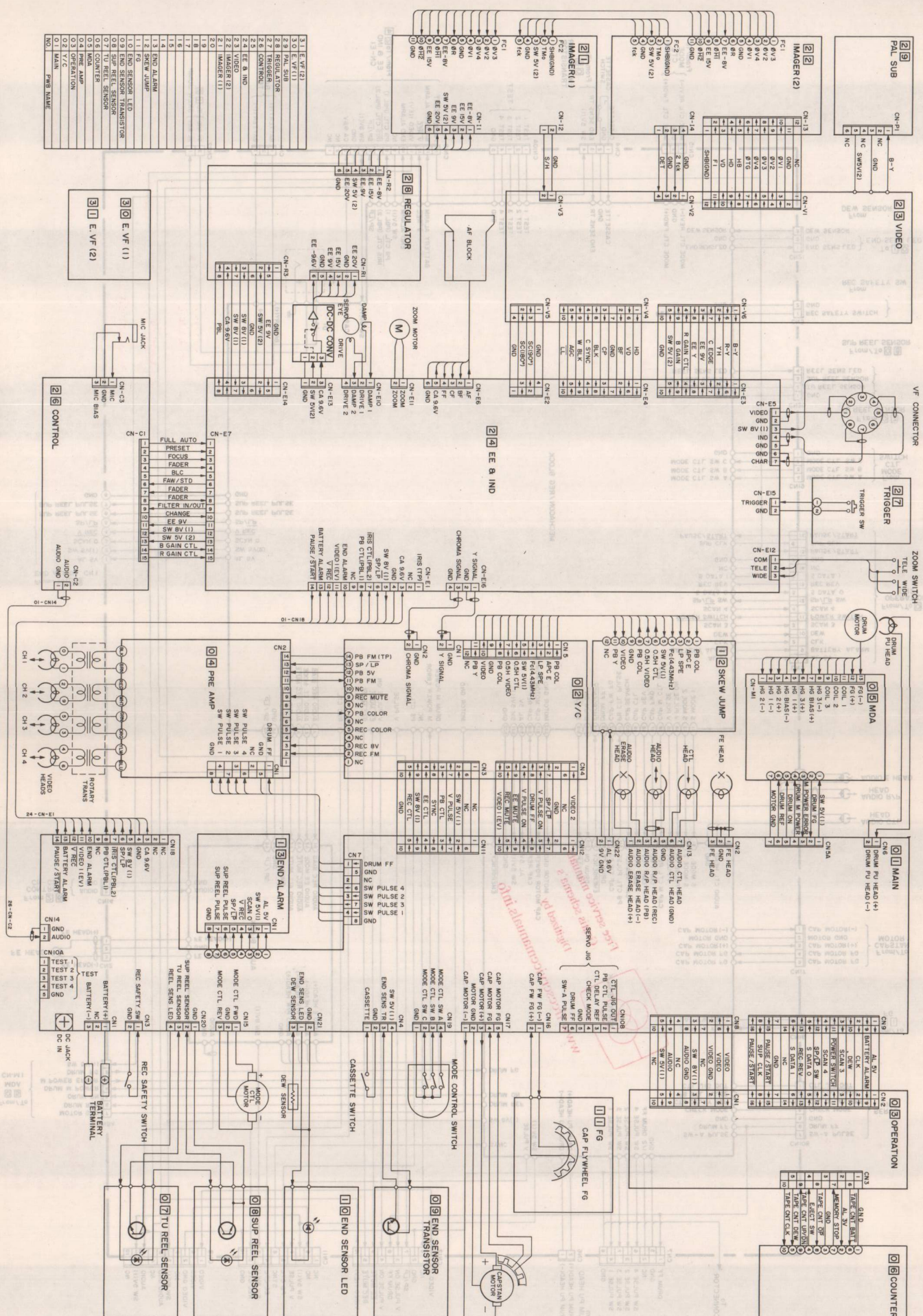
MARGAID K19 IND & EE 4.13

PIN NO.	SYMBOL	NAME	IN/OUT	DESCRIPTION
1	TEND	TAPE END	IN	TAPE END : H
2	REC	SP RECORDING	IN	SP MODE RECORDING : L
3	LP REC	LP RECORDING	IN	LP MODE RECORDING : L SP MODE : H
4	\overline{VD}	V SYNC INPUT	IN	V SYNC SIGNAL INPUT TERMINAL
5	HD	H SYNC INPUT	IN	H SYNC SIGNAL INPUT TERMINAL
6	VSS	GND		GND
7	OSC 1	CRYSTAL OSCILLATION		CR OSCILLATION TERMINAL (5.36 MHz)
8	OSC 2			
9	TST 1	TEST MODE SHIFT		TEST MODE SHIFT TERMINAL OPIN-IN USE
10	TST 2			
11	TRIG	TRIGGER INPUT	IN	TRIGGER INPUT TERMINAL
12	NC	—		NO CONNECT
13	SIS Q	TOGGLE OUTPUT	OUT	REC START/STOP INVERSION OUTPUT
14	SIS \overline{Q}			TO OUTPUT INVERSION STORED DATA BY TRIGGER SIGNAL
15	AF OUT	AUTO FOCUS OUT	OUT	AUTO FOCUS : H PLAY BACK : L
16	QFA	QUICK FADER	OUT	FADER IN : H FADER OUT : L
17	VDD	POWER SOURCE	IN	+5 V POWER SOURCE TERMINAL
18	FAD	FADER (1)	OUT	FADER IN : H FADER OUT : L
19	FC OUT	FILTER CHANGE OUT	OUT	IN DOOR : L OUT DOOR : H
20	STD OUT	STANDERD OUT	OUT	FULL AUTO WHITE : L STANDERD : H
21	NC	—		NO CONNECT
22	VCC	POWER SOURCE	IN	+5 V POWER SOURCE TERMINAL
23	FILTC	FILTER CHANGE	IN	IN DOOR : L OUT DOOR : H
24	FA OUT	FULL AUTO	IN	FULL AUTO WHITE : L STANDERD : H
25	FADER	FADER	IN	FADER IN : H FADER OUT : L
26	VDD	POWER SOURCE	IN	+5 V POWER SOURCE TERMINAL
27	AUTO F	AUTO FOCUS	IN	MANUAL : L AUTO FOCUS : H
28	3/4	GND		GND
29	NC	—		NO CONNECT
30	CONT 1	CONTROL (1)	IN	OUT DOOR : H IN DOOR : L
31	CONT 2	GND		GND
32	PBL 1	GND		GND
33	PBL 2	—	IN	EE : H PB : L
34	NC	—		NO CONNECT
35	RST	RESET	IN	TO RESET TIMMING PULSE GENERATOR RESET : L
36	SMTH	SMOOTH OUT PUT	OUT	INDICATION OUTPUT
37	NC	—		NO CONNECT
38	CF	CORRECT FOCUS	IN	CORRECT FOCUS DETECTED : L
39	BF	BIHIND FOCUS	IN	BIHIND FOCUS DETECTED : L
40	FF	FRONT FOCUS	IN	FRONT FOCUS DETECTED : L
41	STD	GND		GND
42	LLL	LOW LIGHT	IN	LOW LIGHT (IRIS OPEN) : L
43	PAL	PAL MODE		NTSC MODE : L PAL MODE : OPEN
44	BATT	BATTERY DOWN	IN	BATTERY DOWN : L

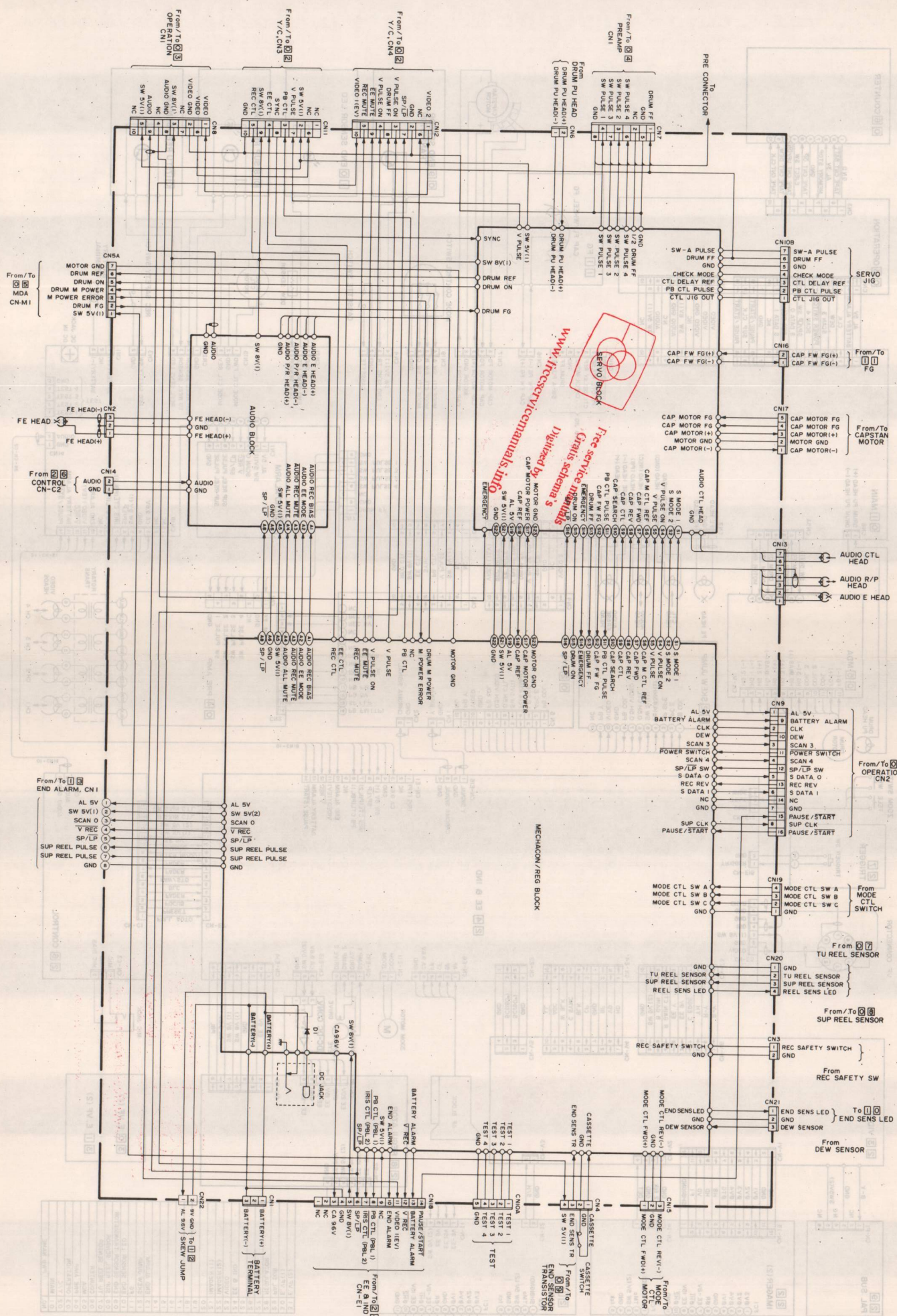


4.14.2 CAPSTAN SERVO TIMING CHART





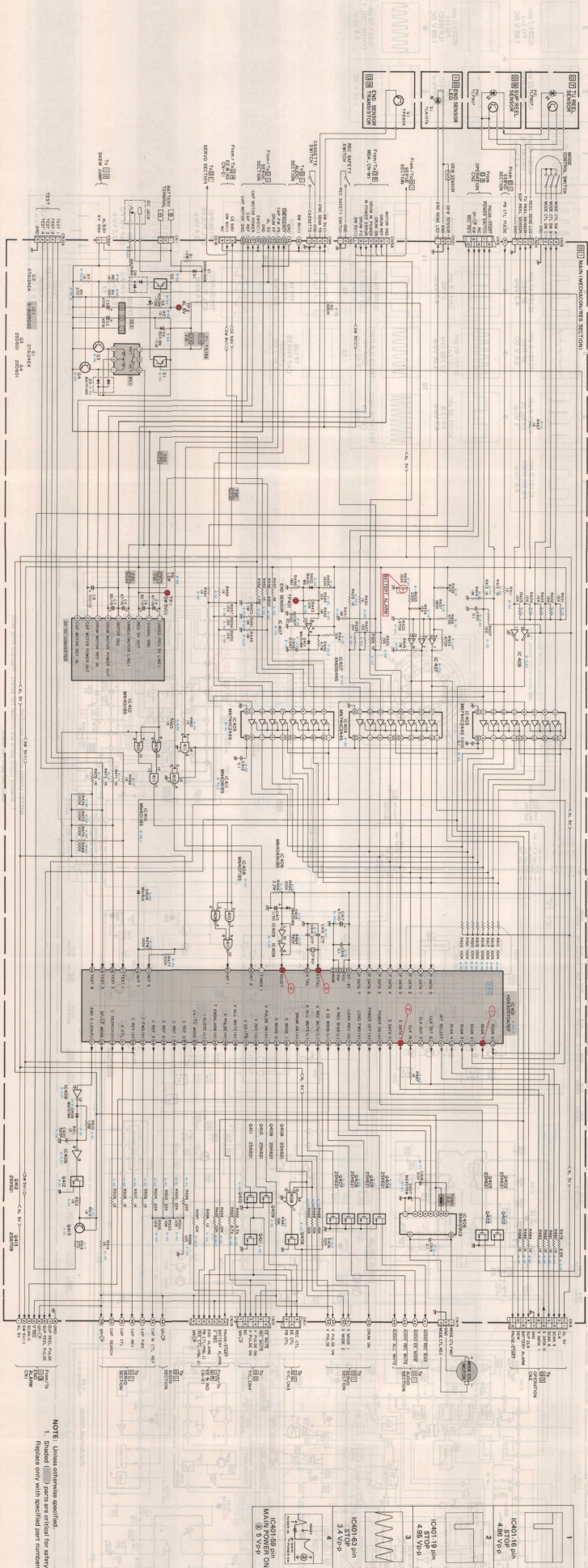
4.16 MAIN BOARD BLOCK DIAGRAM



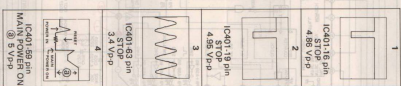
4.17 MECHACON & REGULATOR SCHEMATIC DIAGRAM

— Murata ACIM to smotherly —

— Murata ACIM to smotherly —



— Waveform of mechacon circuit —



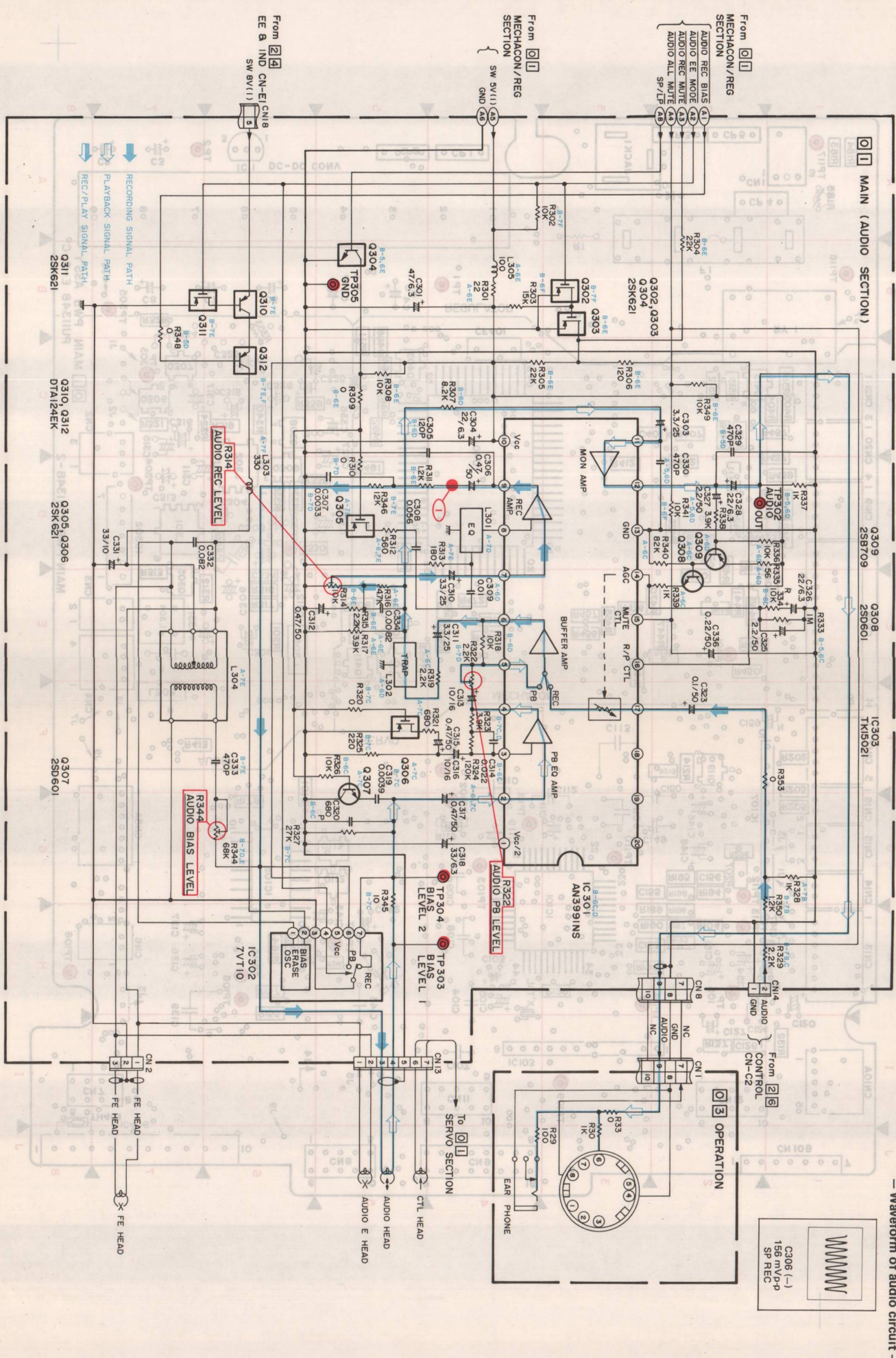
NOTE: Unless otherwise specified, 1. Shaded parts are critical for safety. Replace only with specified part numbers.



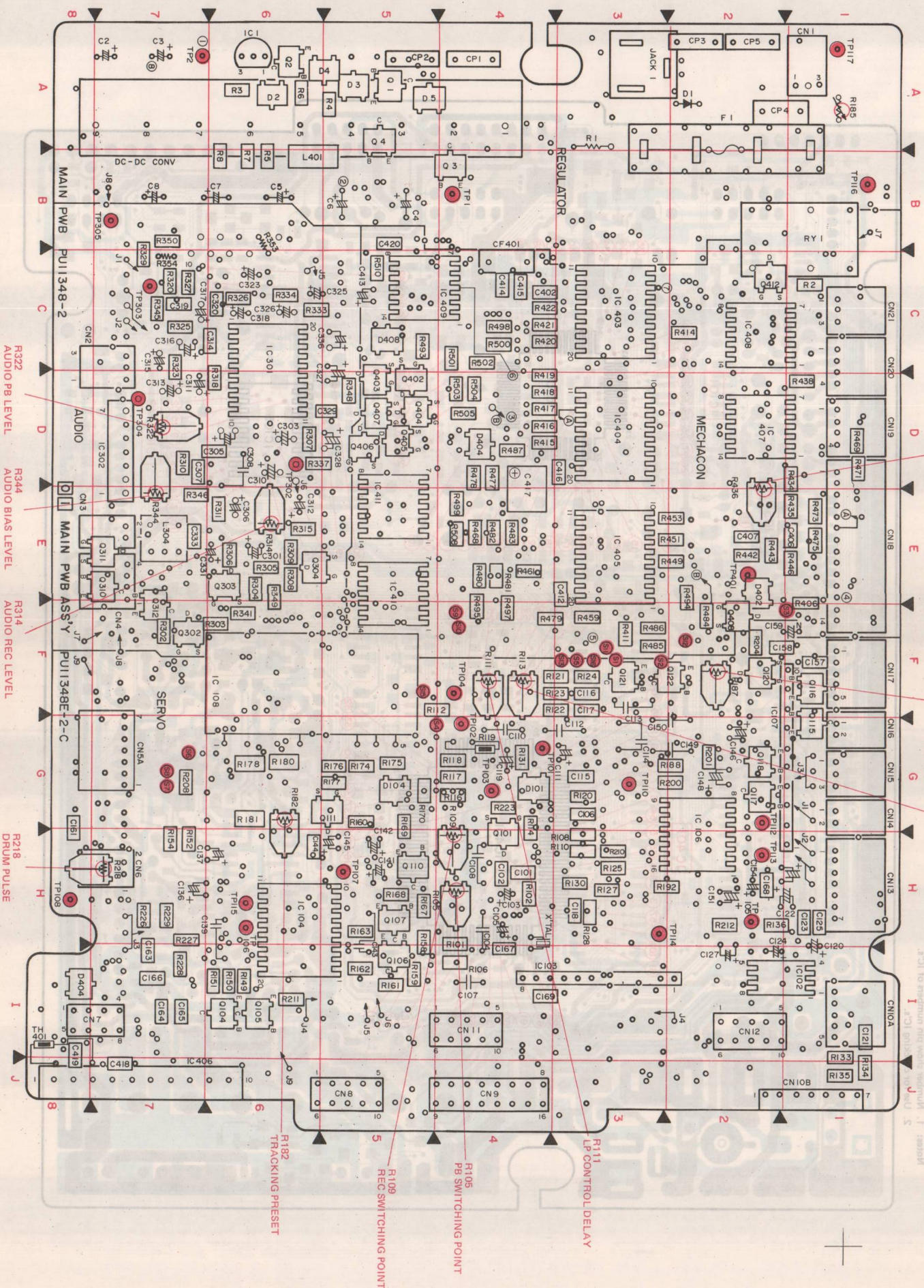
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4-32

— Waveforms of MDA circuit —

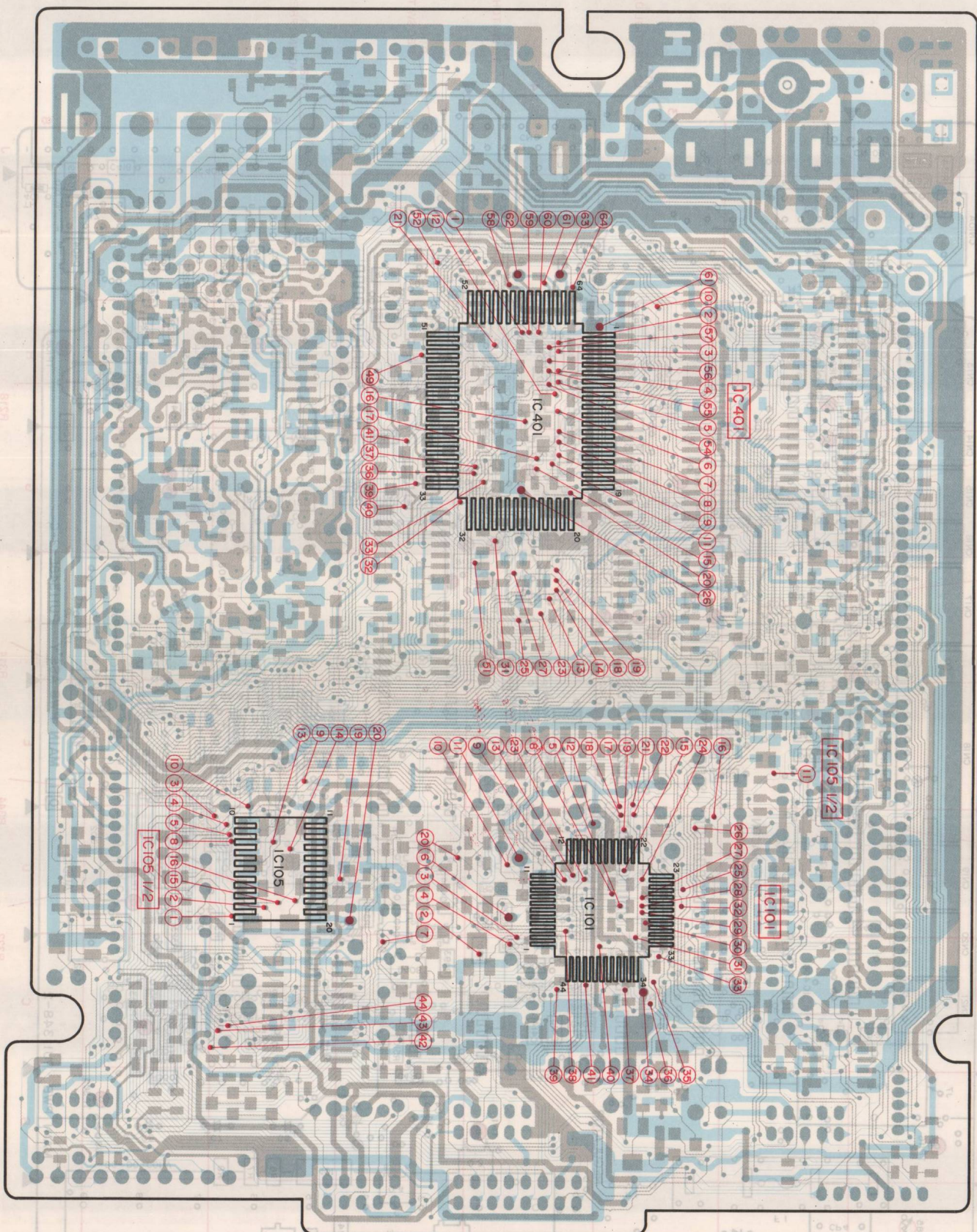






4.21 MAIN BOARD THROUGH HOLE LOCATION

- Notes: 1. Number show pin numbers of IC's.
2. Use for checking IC's.





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4.26 SKEW JUMP AND SUB CIRCUIT BOARD



4-38

SUB PWB ASS'Y
PU59780A-C
SUB PWB
PU59780

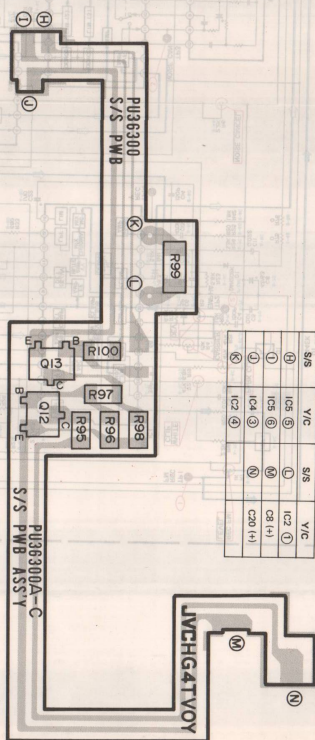
SUB PWB ASS'Y
PU59780A-C
SUB PWB
PU59780

SUB PWB ASS'Y
PU59780A-C
SUB PWB
PU59780

4.28 S/S CIRCUIT BOARD

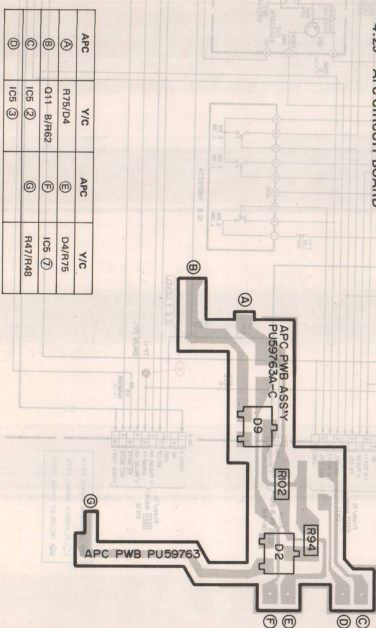
Notes:

1. Number show pin number of IC's
2. Use for checking IC's.



S/S	Y/C	S/S	Y/C
(H)	IC5 (5)	(L)	IC2 (1)
(I)	IC5 (6)	(M)	CB (+)
(T)	IC4 (3)	(N)	C20 (+)
(X)	IC2 (4)		

4.29 APC CIRCUIT BOARD



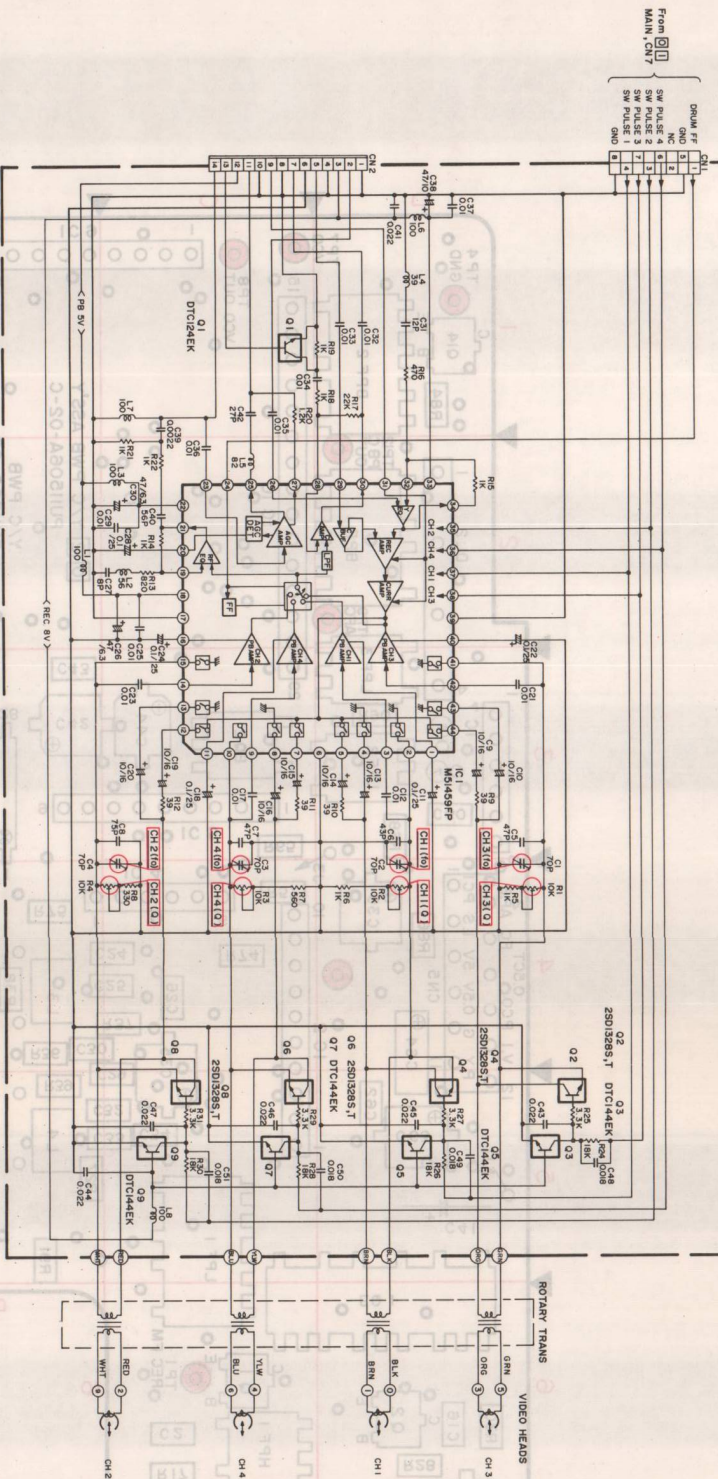
APC	V/C	APC	V/C
①	R75/D4	③	D4/R75
②	Q11 8/R62	④	IC5 ⑦
③	IC5 ②	⑤	R47/R48
④	IC5 ③		



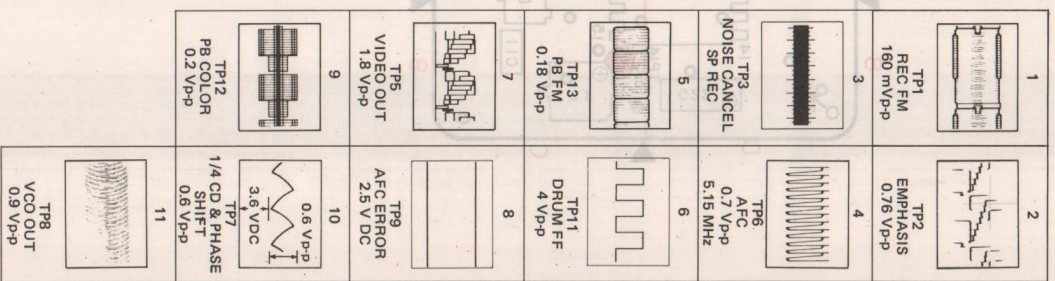
NOTE: Unless otherwise specified

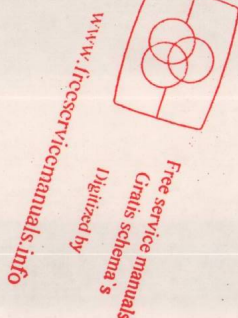
1. Shaded () parts are critical for safety. Replace only with specified part numbers.

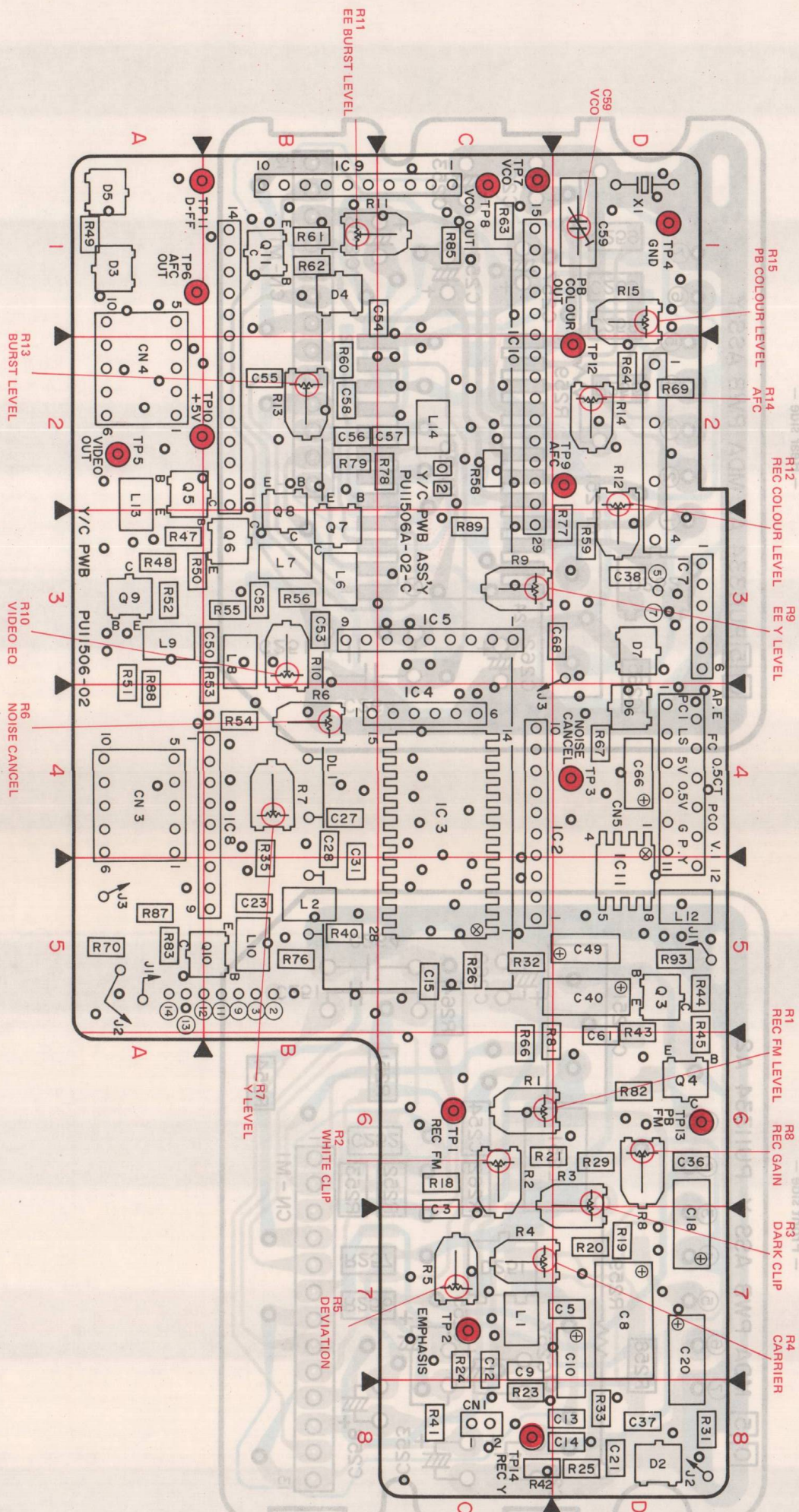
PRE AMP IC

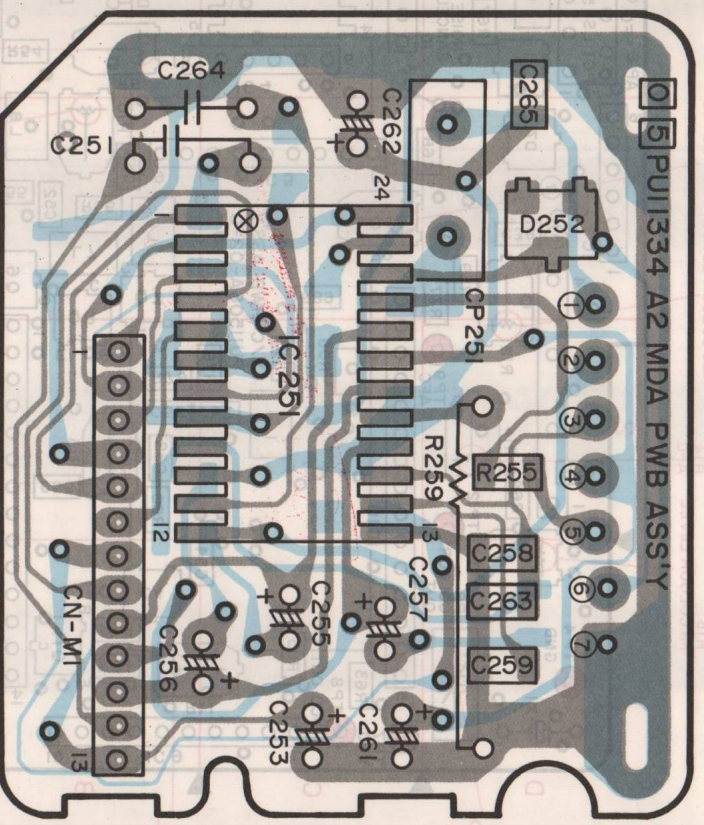
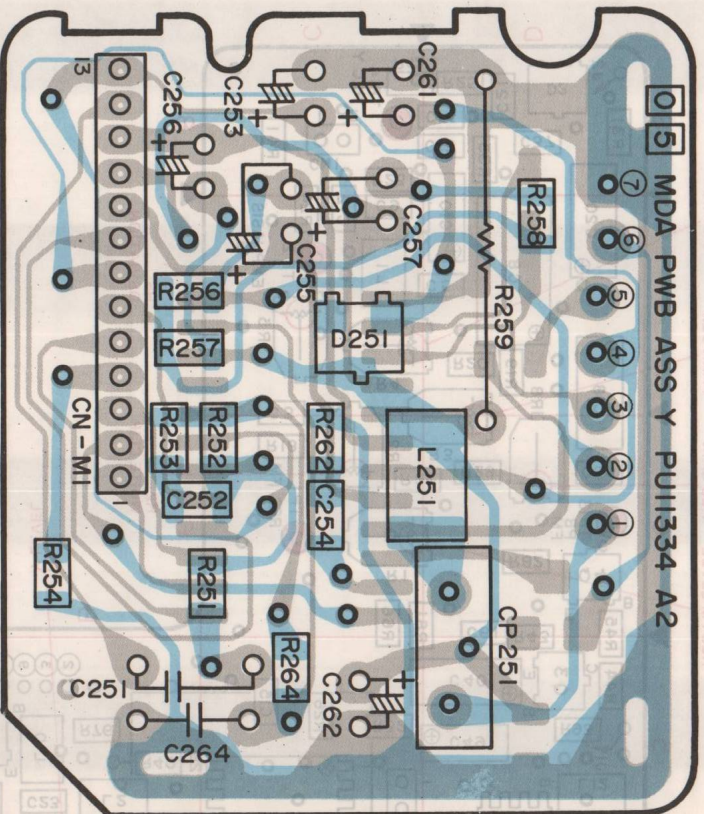


Waveforms of V/C circuit

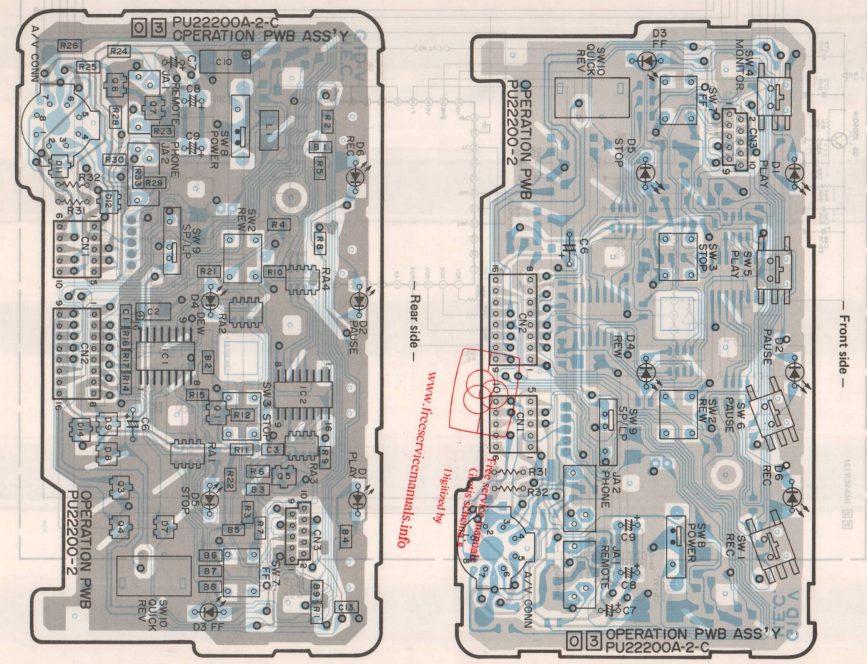


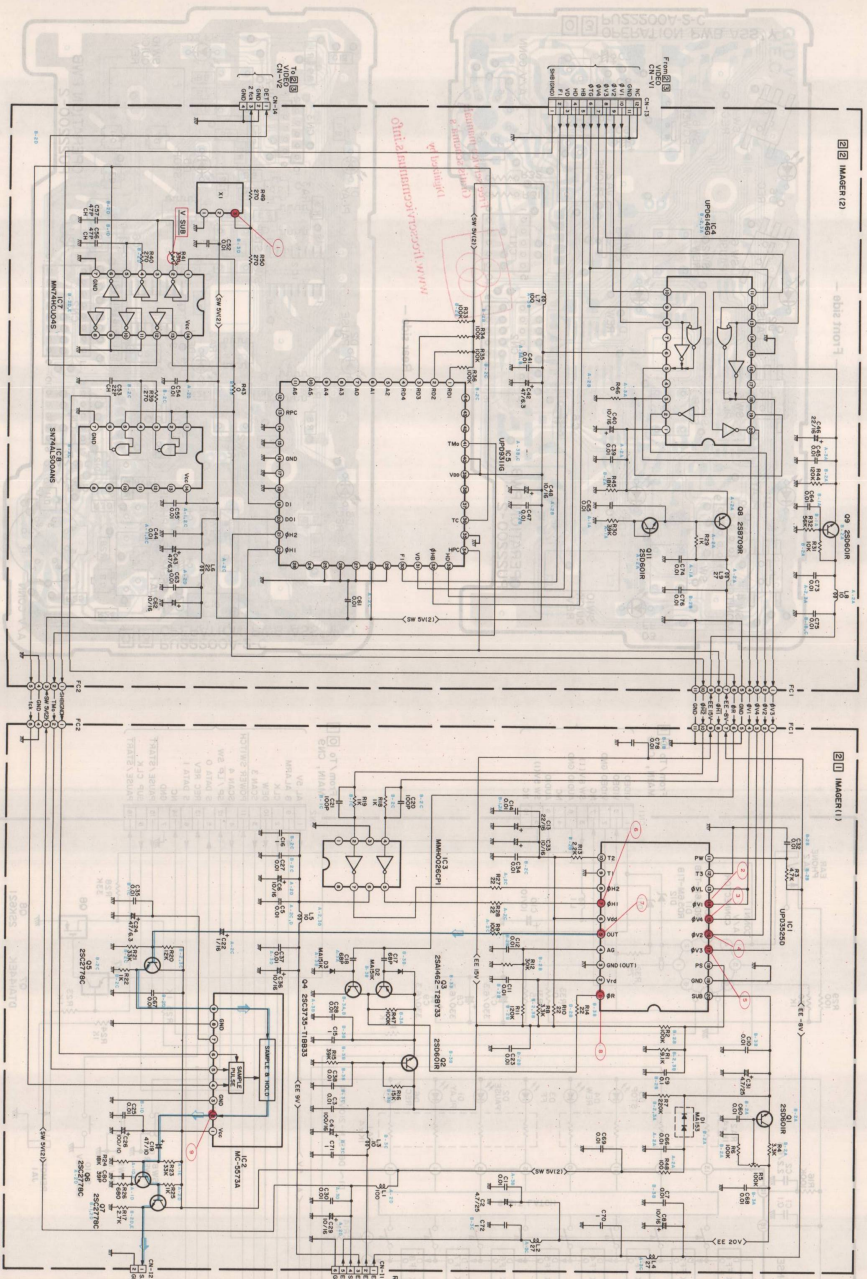




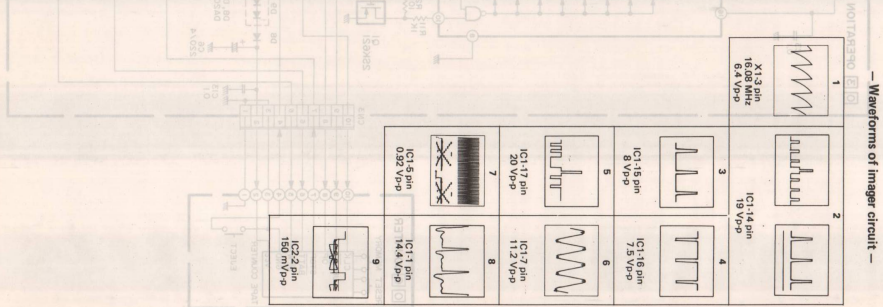


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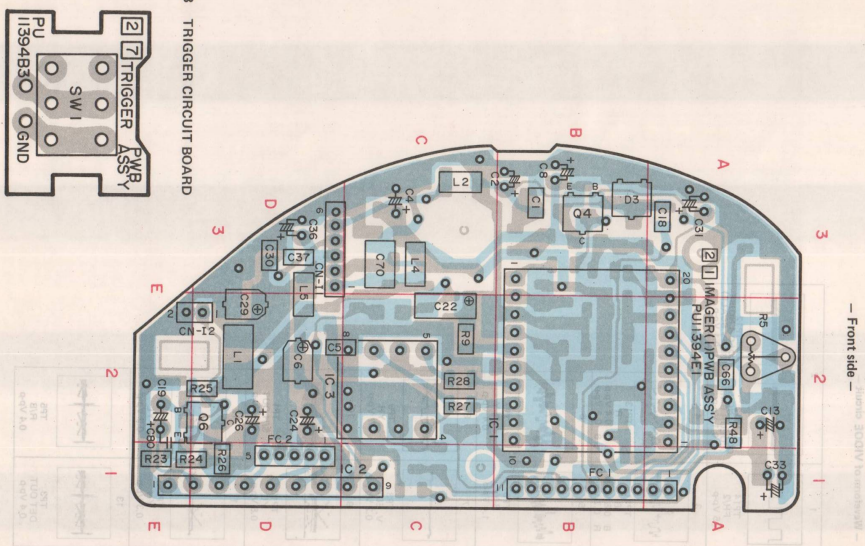


NOTE: Unless otherwise specified,
1. Waveform measurements:
When possible, completely filling the picture
area at 50.

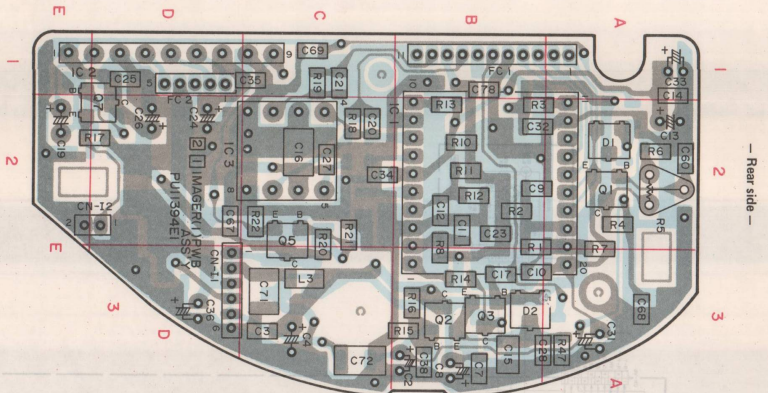
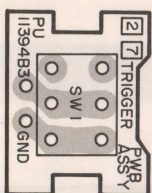


Waveforms of Imager circuit -

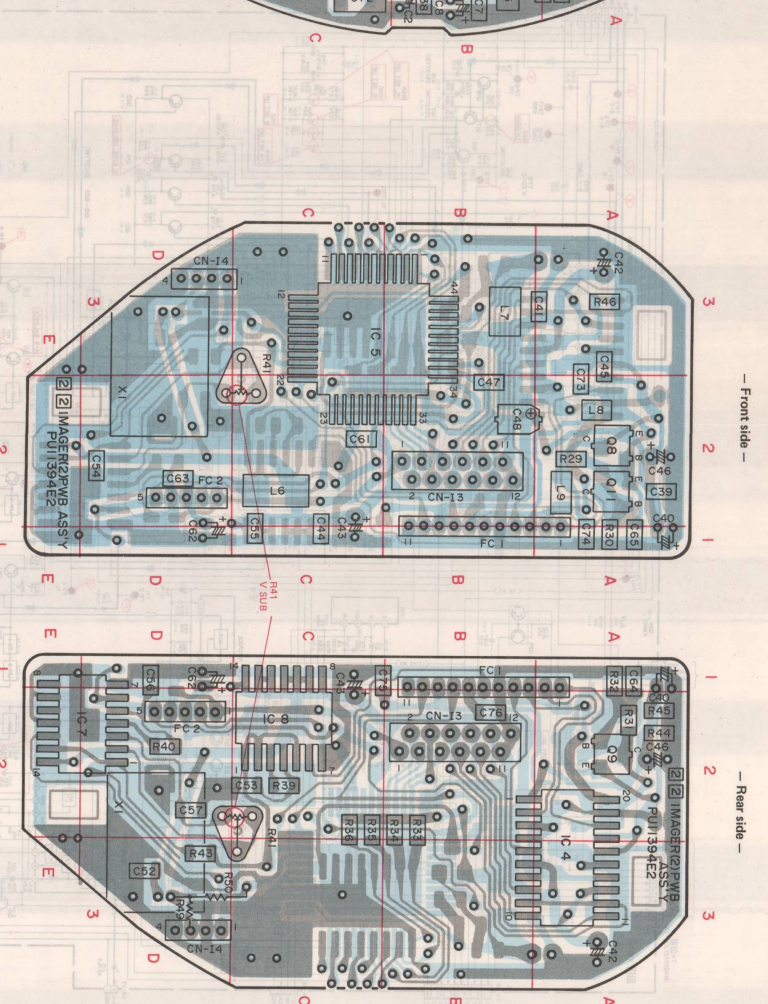
4.36 IMAGER (1) CIRCUIT BOARD



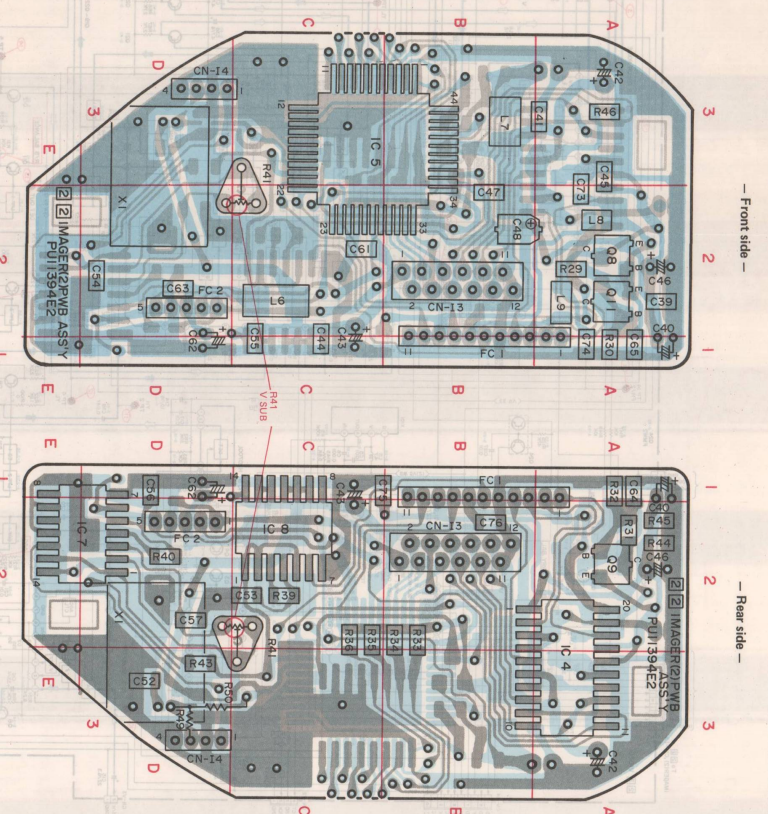
4.38 TRIGGER CIRCUIT BOARD



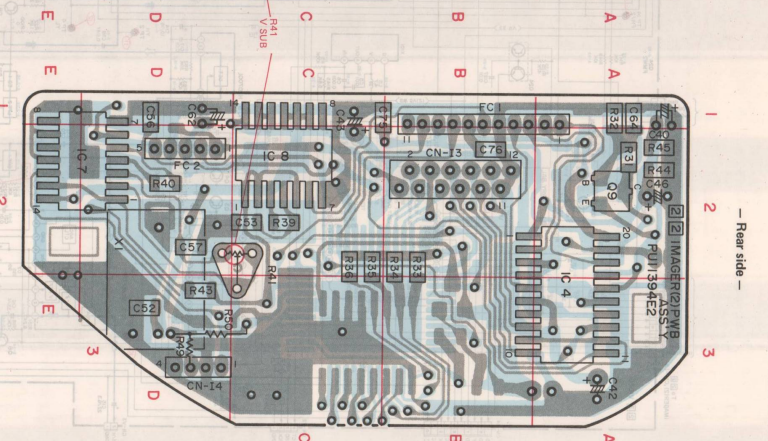
— Rear side —



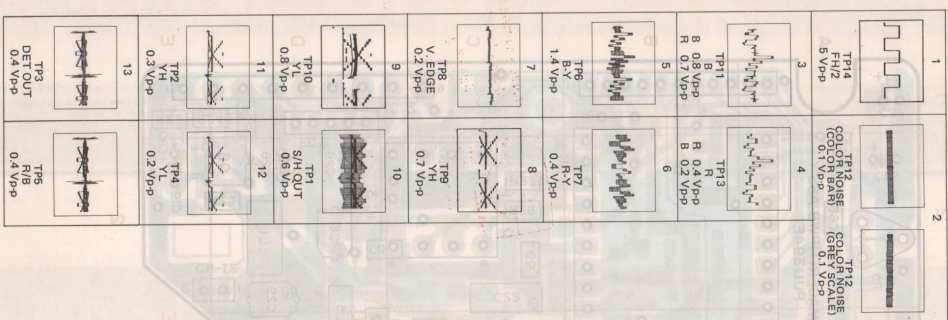
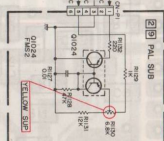
4.37 IMAGER (2) CIRCUIT BOARD



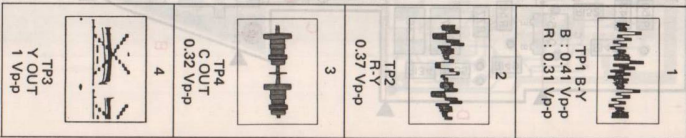
— Front side —



— Rear side —



– Waveform of EE &

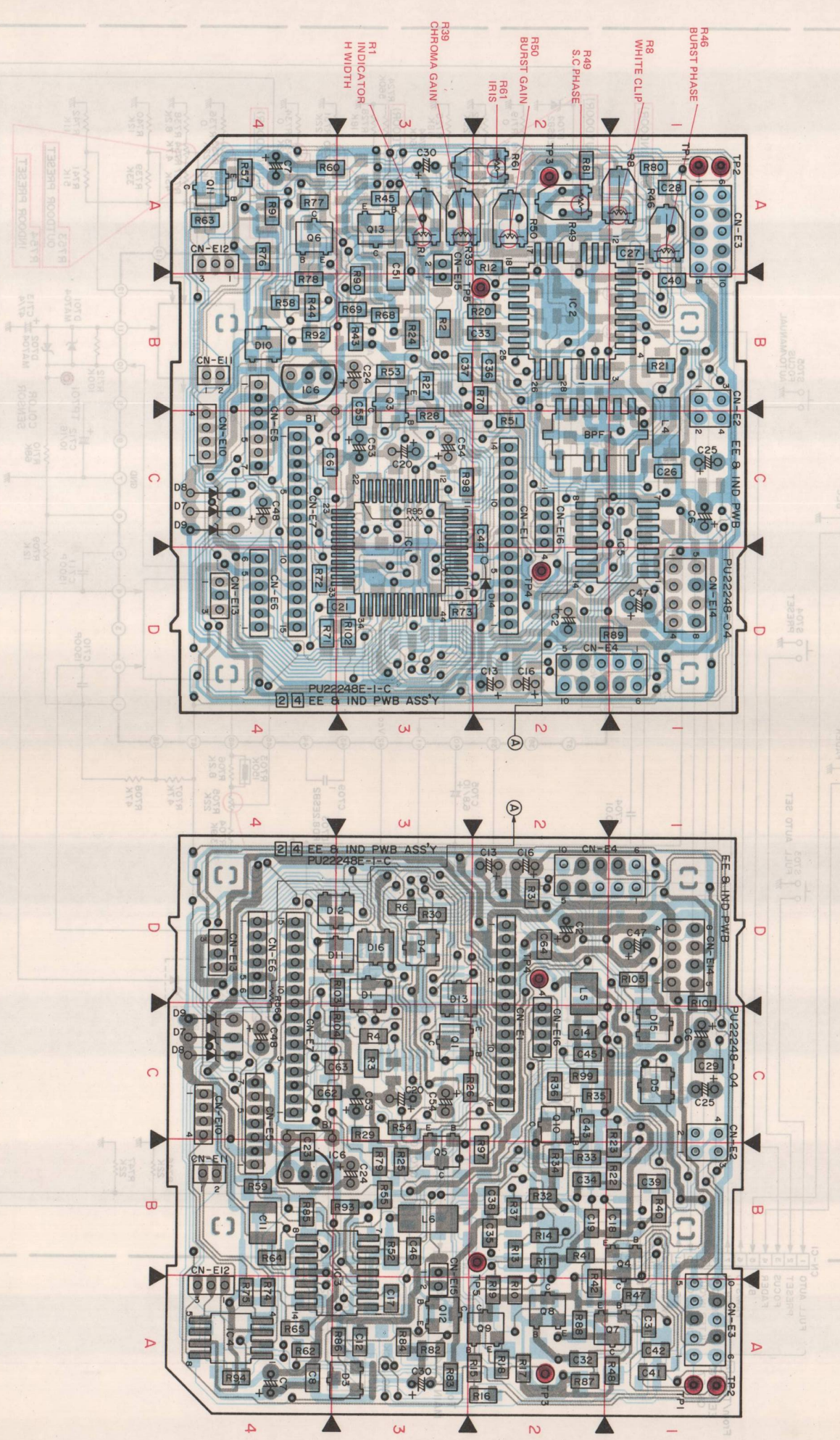


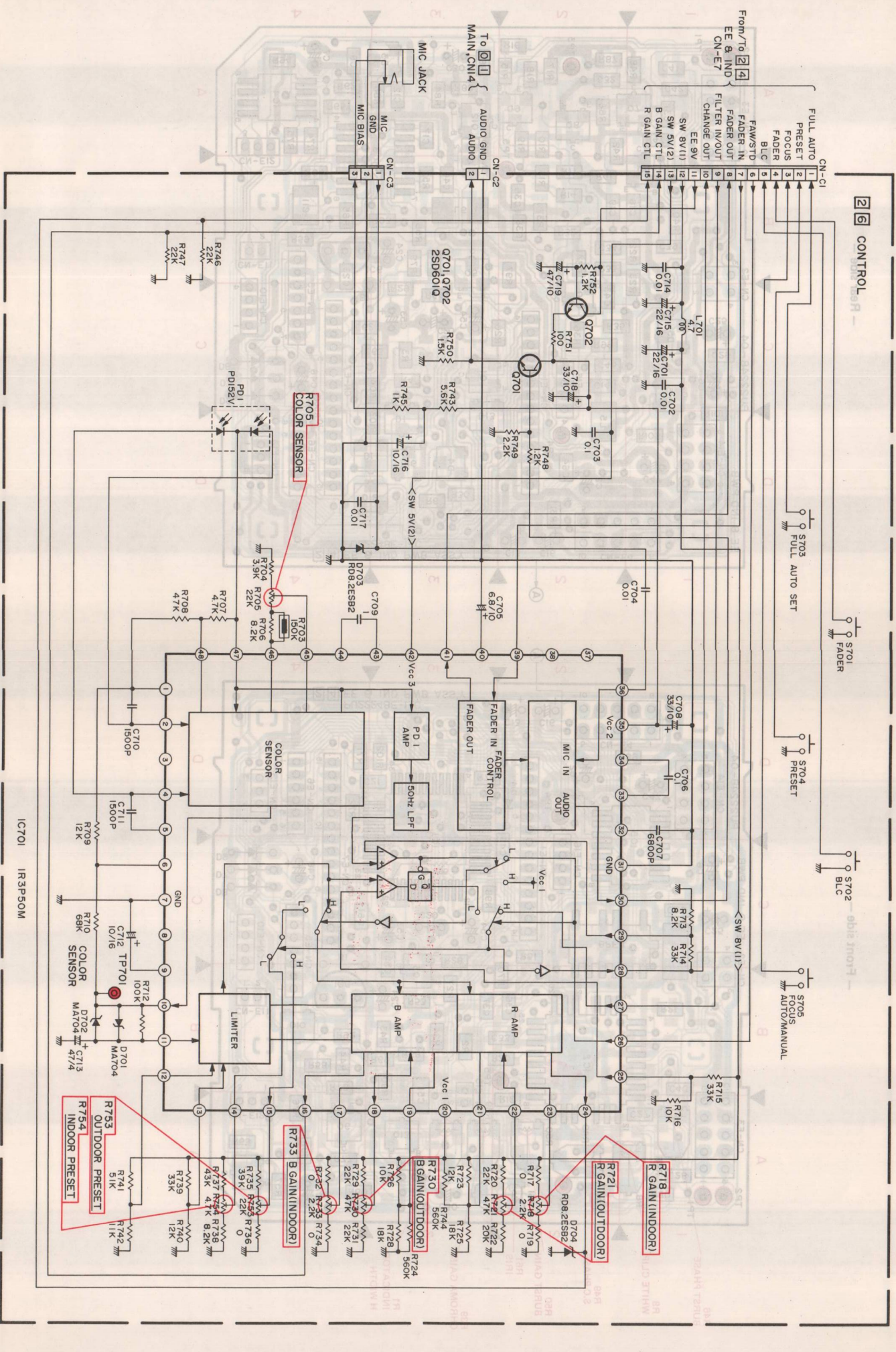
1. Shaded () parts are critical for safety. Replace only with specified part numbers.

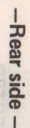
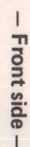
World of free manuals

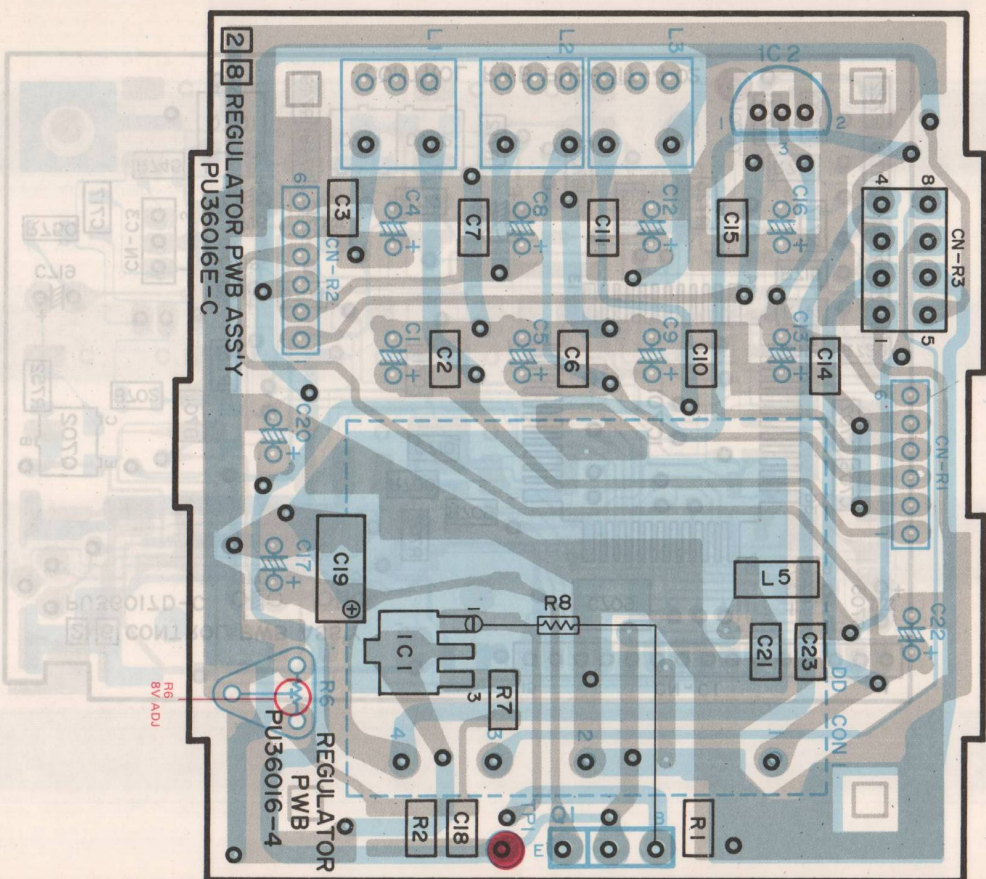
— Front side —

— Rear side —



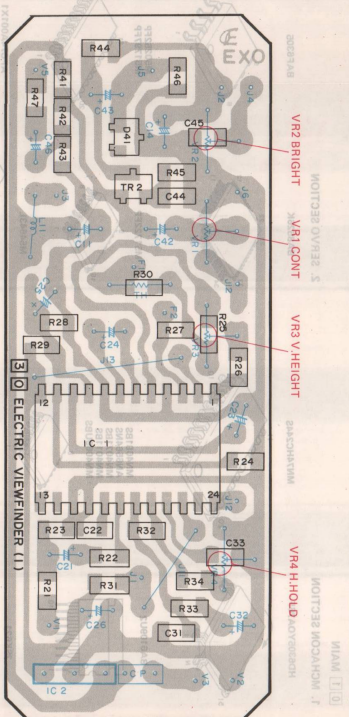
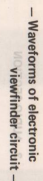






1. Shaded () parts are critical for safety. Replace only with specified part numbers.

4.49 ELECTRONIC VIEWFINDER CIRCUIT BOARD



4.49 ELECTRONIC VIEWFINDER CIRCUIT BOARD



03 OPERATION

05 MDA

12 SKEW JUMP

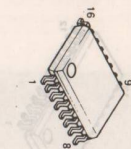
13 END ALARM

21 IMAGER (1)

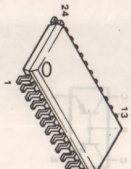
22 IMAGER (2)

23 VIDEO

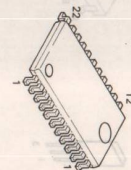
TM1033NSE
MN4021BS



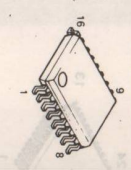
BA6450F



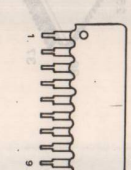
AN3592S



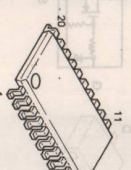
UPD4040BG
UPD4027BG



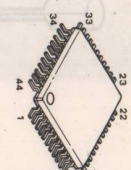
MC-5573A



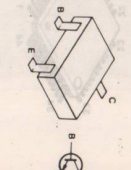
UPD6146G



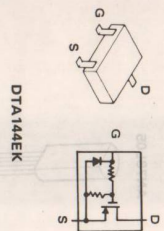
UPD8310G



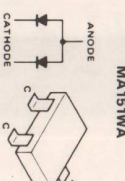
2SC2778C



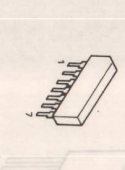
2SK621



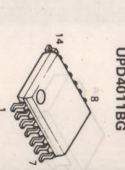
MA151WA



TA7374P



UPD4069UBG
UPD4013BG
UPD4068BG
UPD4011BG



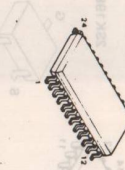
MMH0026CP1



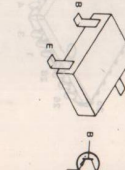
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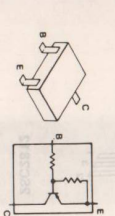
MS1277FP



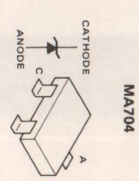
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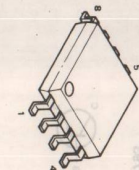
DTA144EK



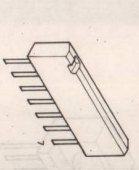
MA704



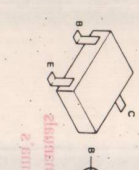
MSM6989MS



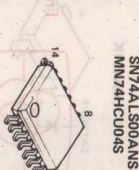
BA222



2SC3735
2SC2778C
2SD601



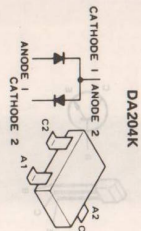
SN74ALS00ANS
MN74HC04S



HA11881MP



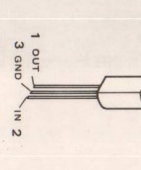
DA204K



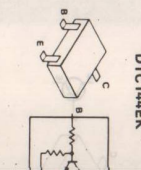
MA151A



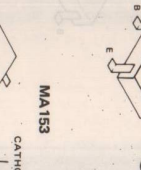
AN8009



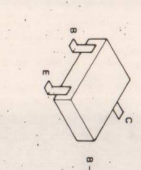
DTC144EK



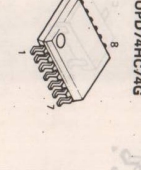
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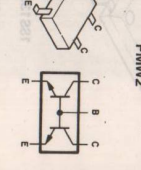
2SB709



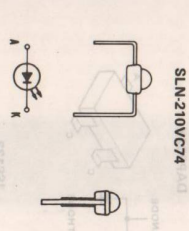
UPD74HC74G



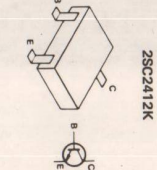
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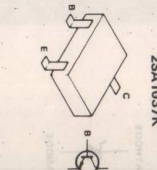
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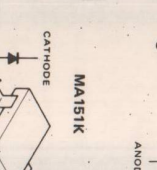
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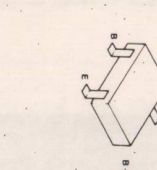
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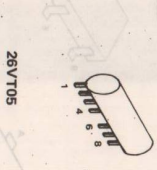
MA151K



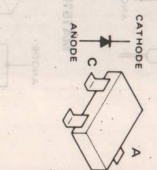
2SD601



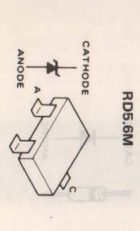
HBD7001



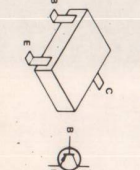
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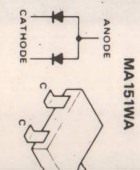
RD5.6M



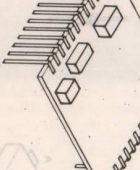
2SA1037K



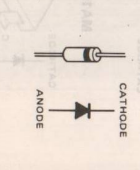
MA151WA



28V705



1SS99



2 4 EE & IND

03QIV 2 5

5 REDAM 3 13

11 REDAM 2 6 CONTROL

2 8 REGULATOR

2 9 PAL SUB

3 0 ELECTRONIC VIEWFINDER (1)

250133

MA1239JVQ

AN8005

25K621

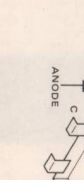
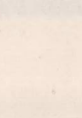
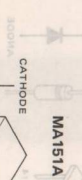
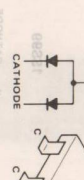
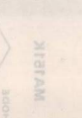
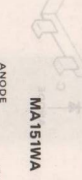
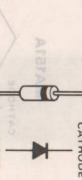
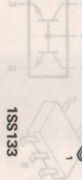
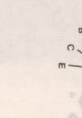
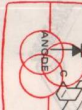
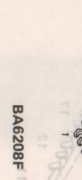
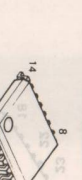
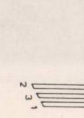
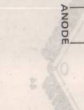
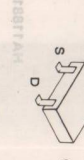
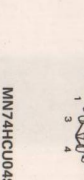
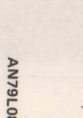
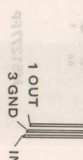
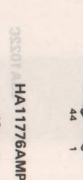
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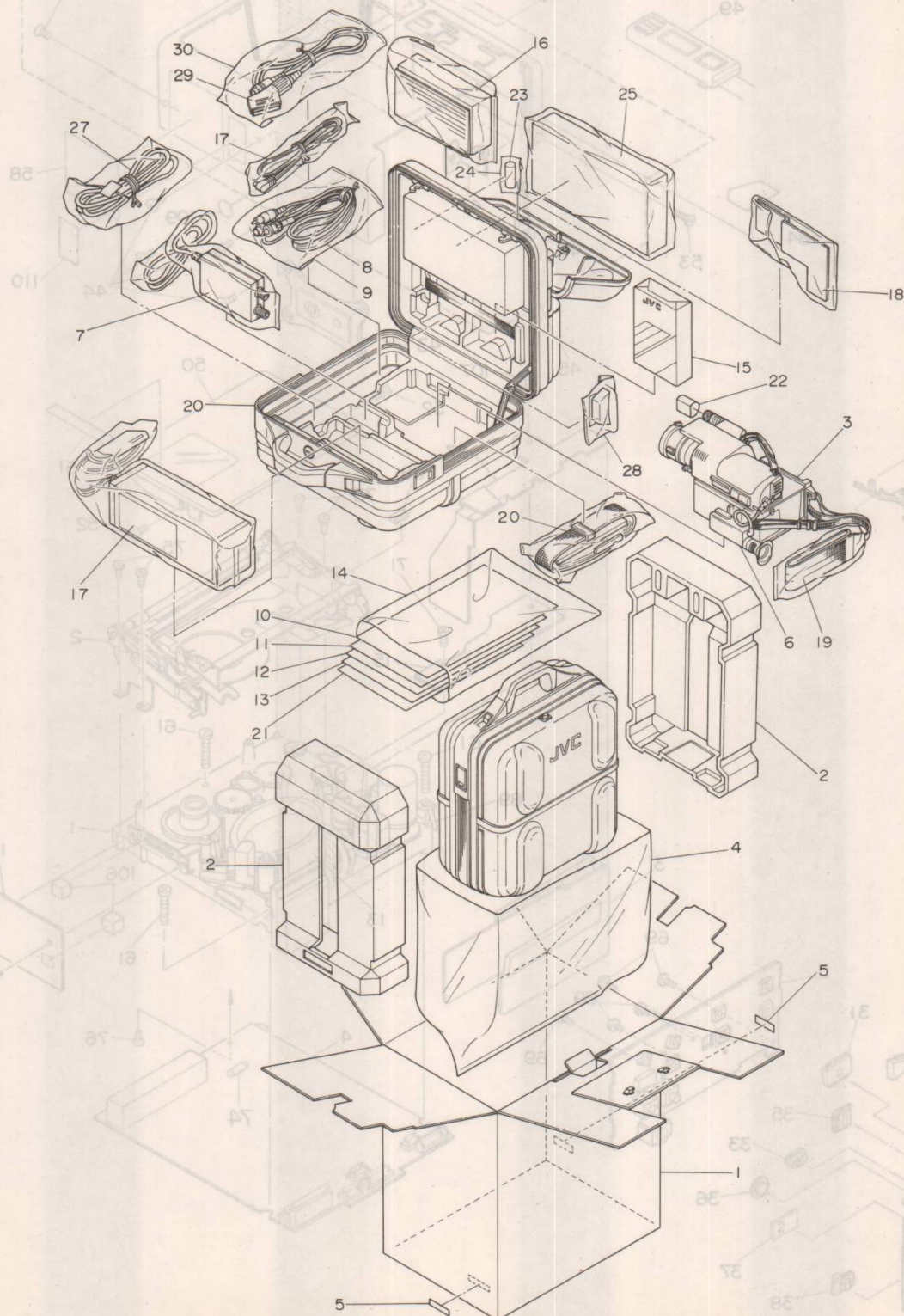
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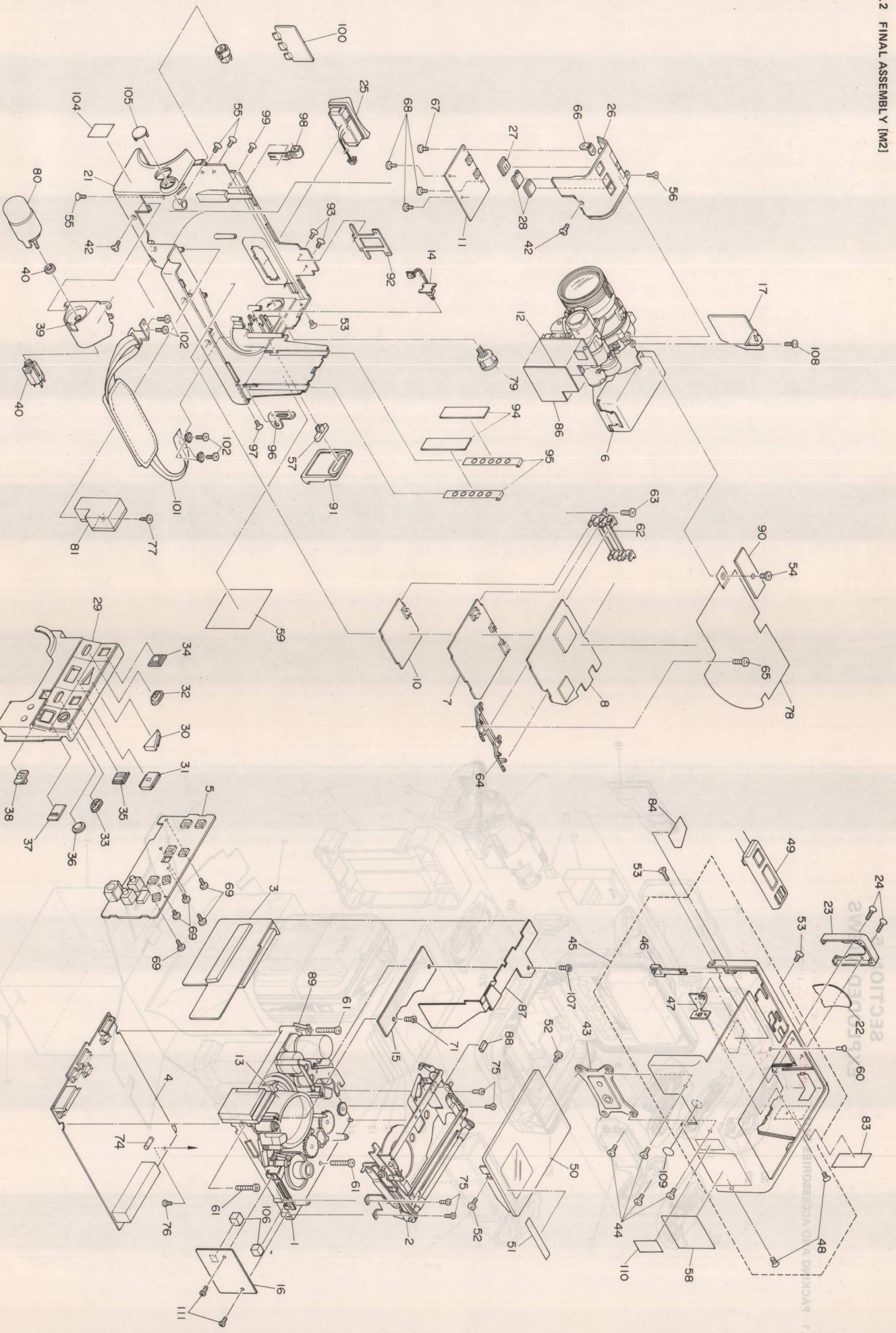
www.freerivemmanuals.info
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Gratis schema's

SECTION 5 EXPLODED VIEWS

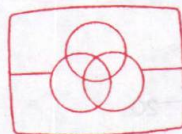
5.1 PACKING AND ACCESSORIES [M1]



5.2 FINAL ASSEMBLY [M2]



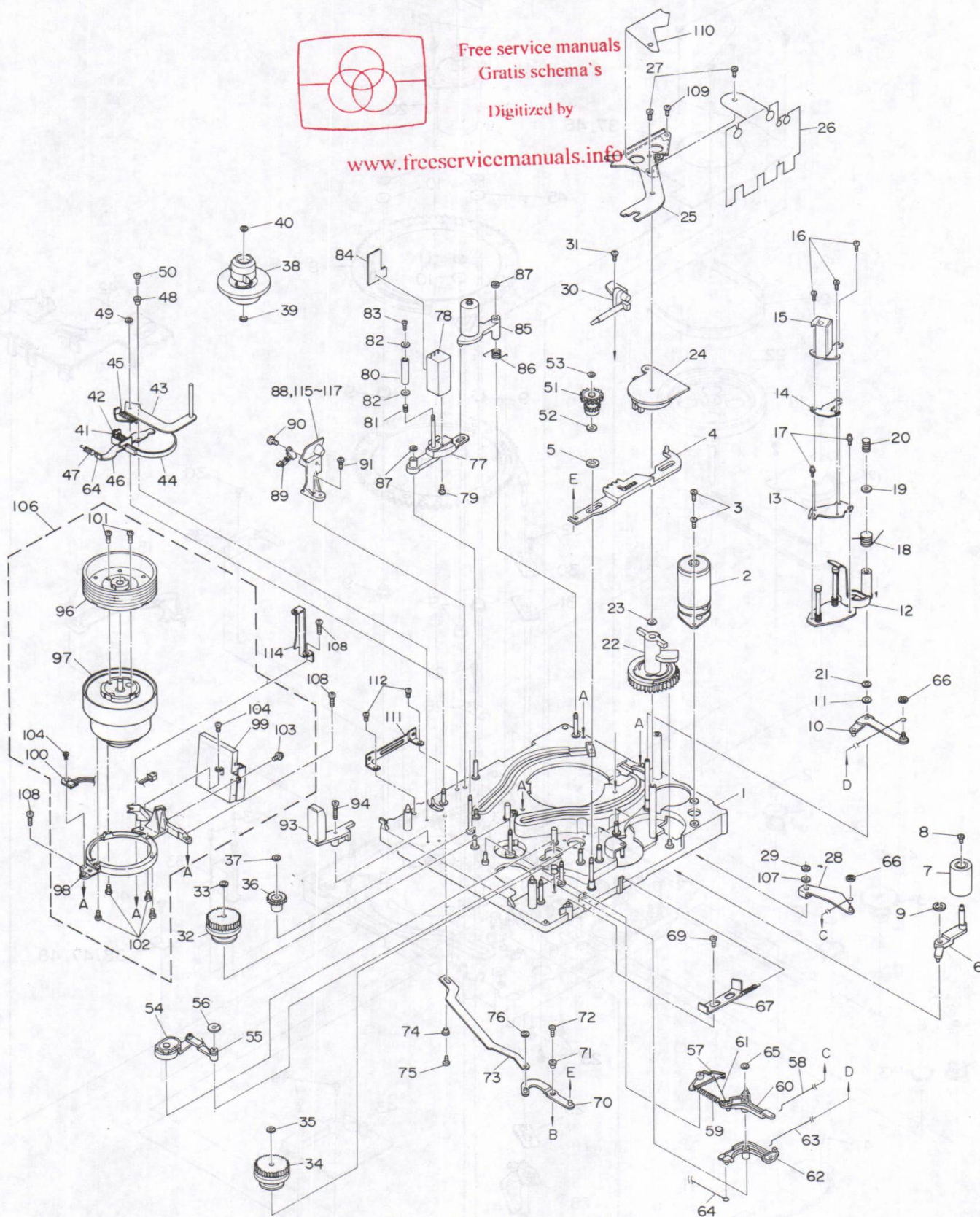
5.3 MECHANISM (1) ASSEMBLY [M3]



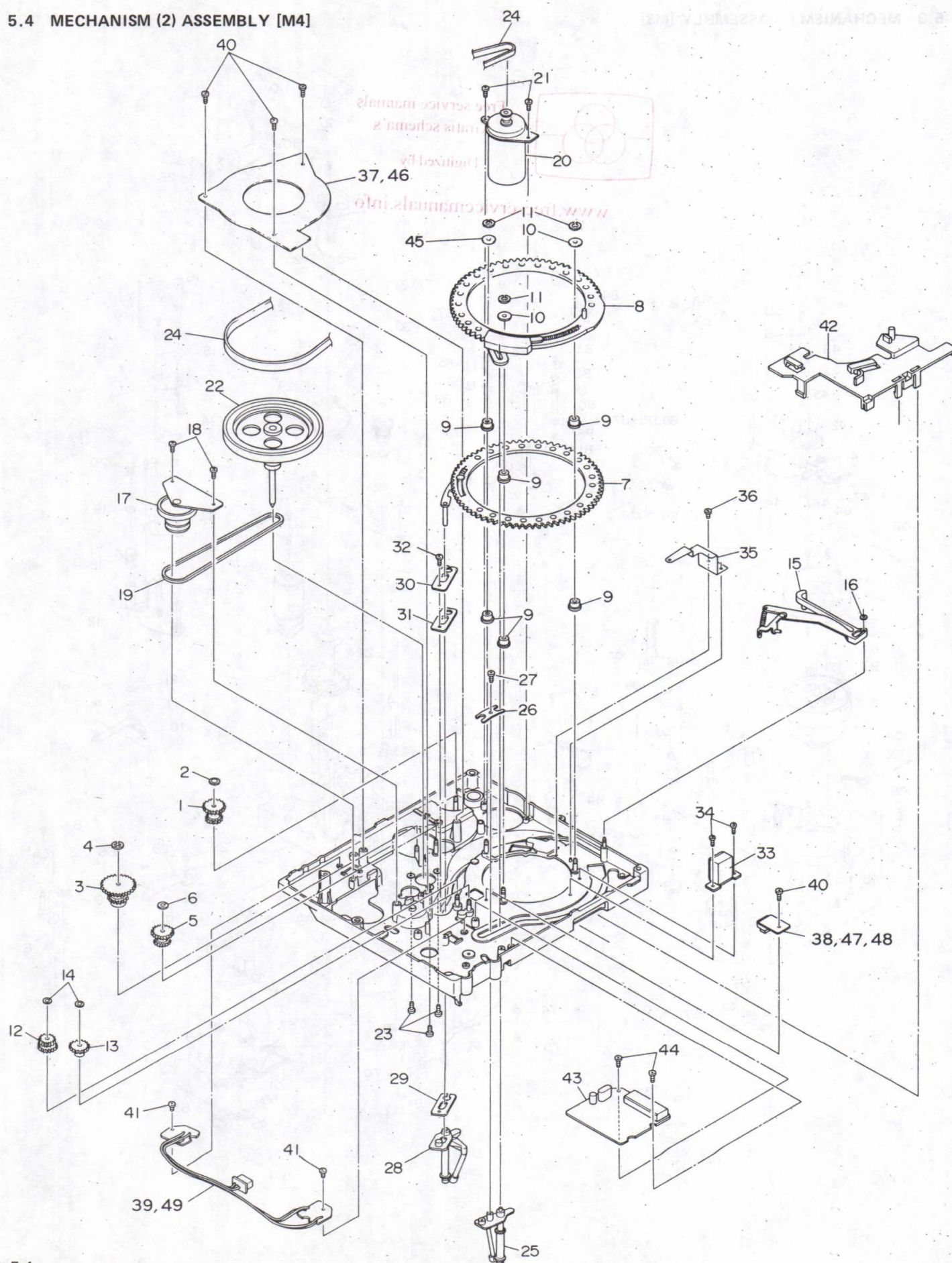
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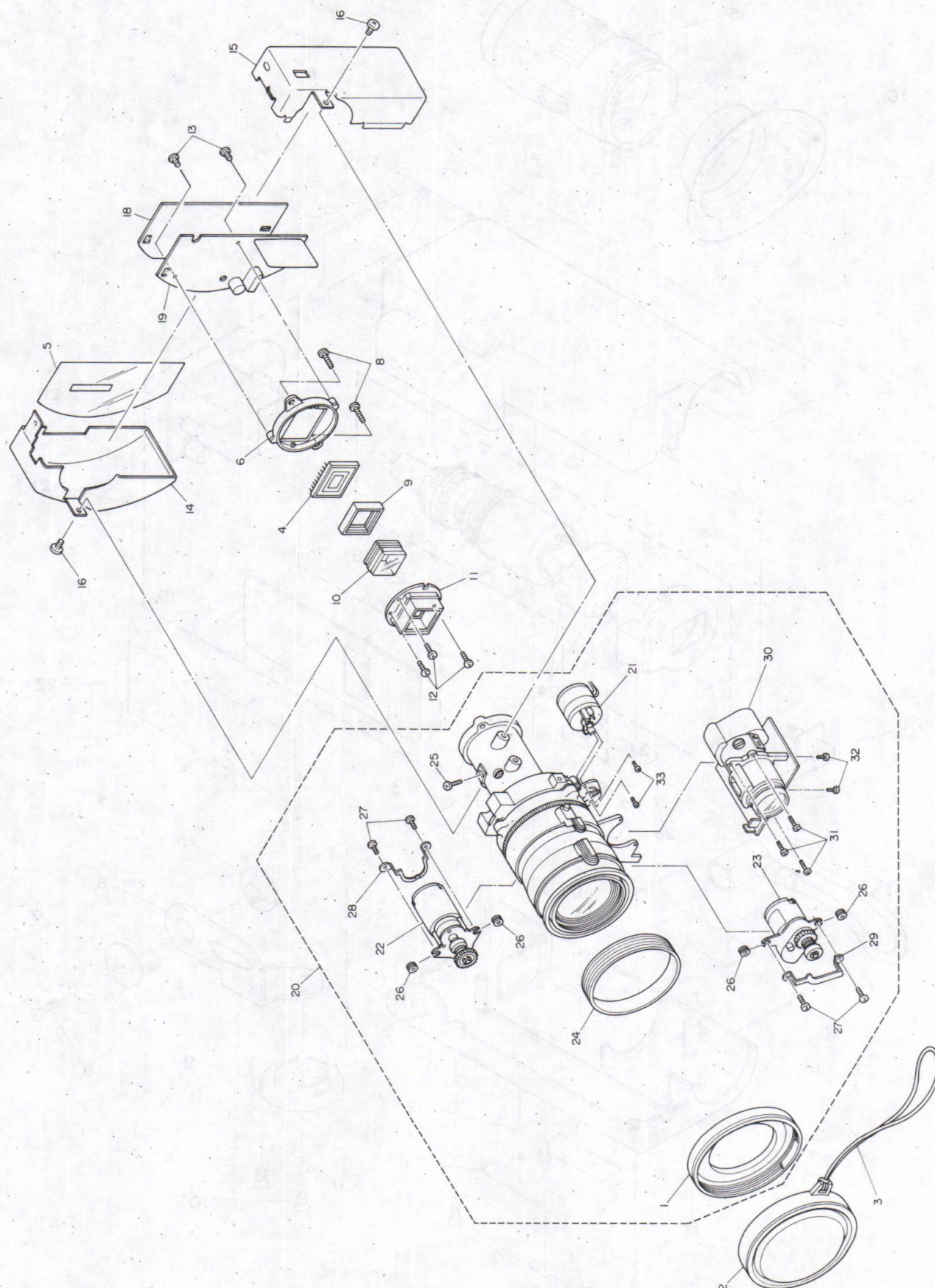
www.freesevicemanuals.info



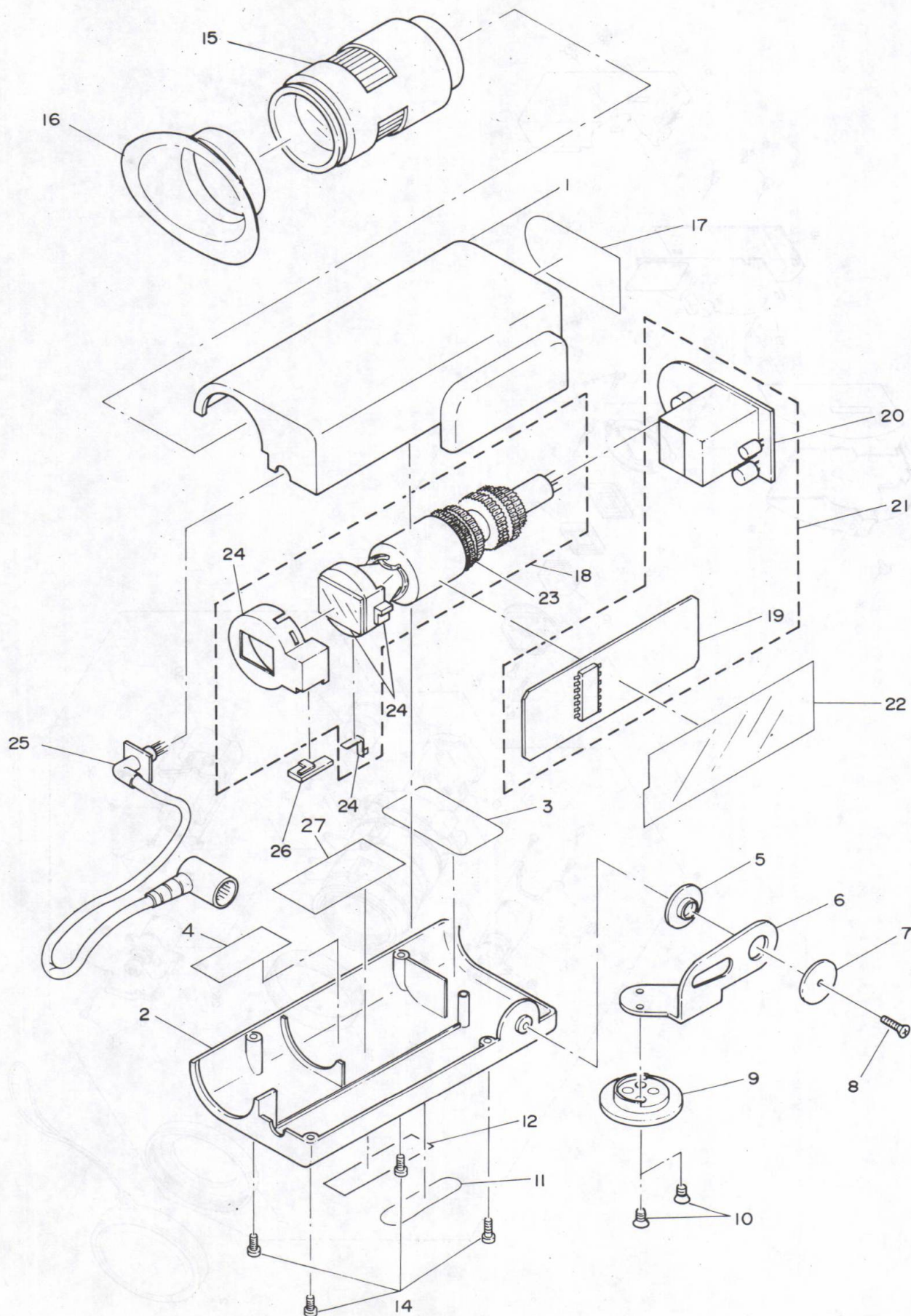
5.4 MECHANISM (2) ASSEMBLY [M4]

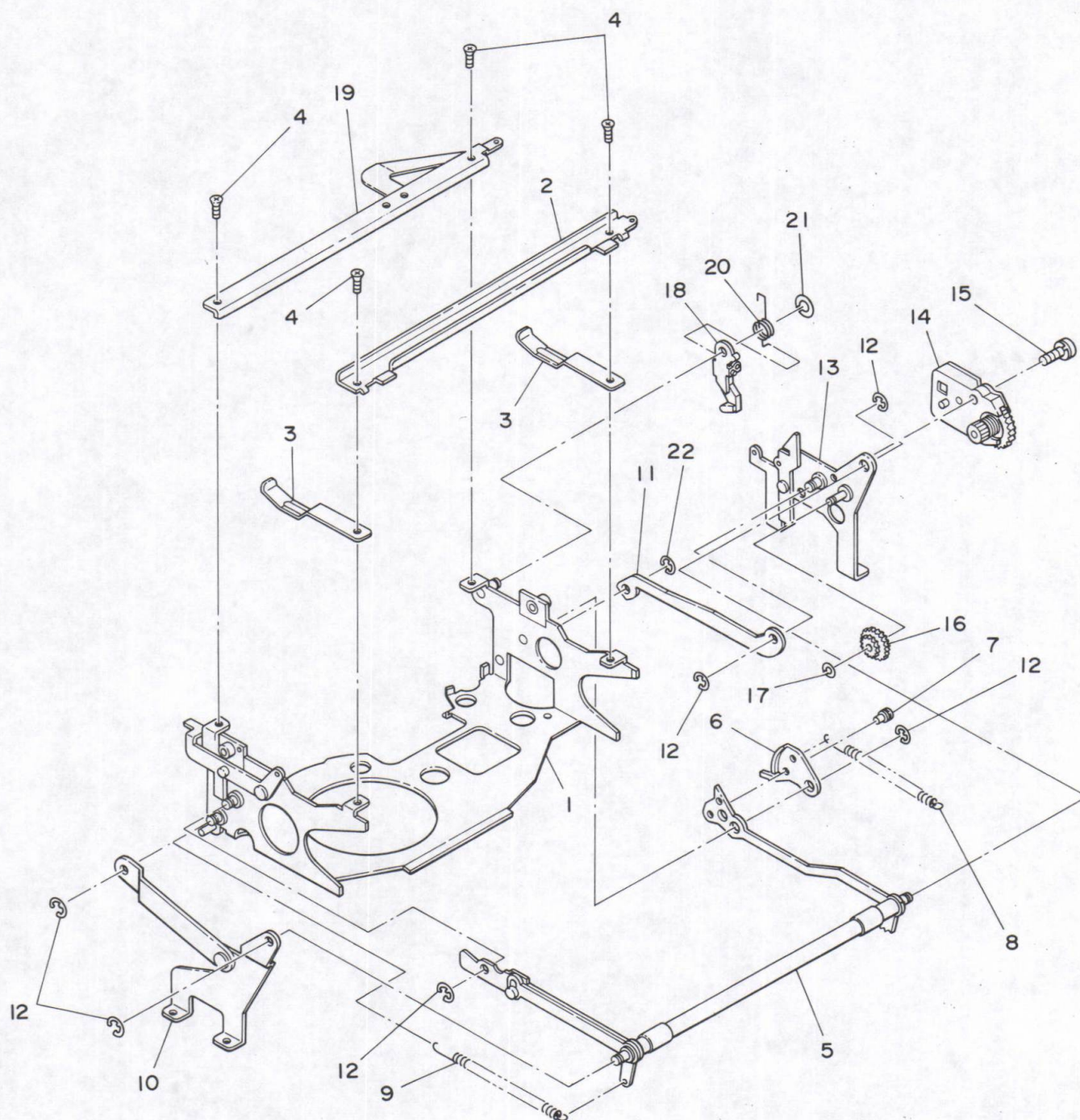


5.5 OPTICAL ASSEMBLY [M5]



5.6 ELECTRONIC VIEWFINDER ASSEMBLY [M6]




5.7 CASSETTE HOUSING ASSEMBLY [M7]

1000 YJ8W/823A • DIMENSION BTTH22AO 1 3



SECTION 6 PARTS LIST

SAFETY PRECAUTION

Parts identified by the  symbol are critical for safety. Replace only with specified part numbers.

ABBREVIATIONS IN THIS LIST ARE AS FOLLOWS:

RESISTORS—All resistance values are in ohms (Ω), unless otherwise indicated.

k	: 1,000 (Kilo)
M	: 1,000,000 (Mega)
Chip R	: Chip Resistor
Chip VR	: Chip Variable Resistor
Comp. R	: Composition Resistor
CR	: Carbon Film Resistor
FR	: Fusible Resistor
MFR	: Metal Film Resistor
MPR	: Metal Plate Resistor
OMR	: Oxide Metal Film Resistor
PMR	: Precision Metal Film Resistor
UFR	: Unflammable Resistor
VR	: Variable Resistor (Potentiometer)
WR	: Wire Wound Resistor

CAPACITORS—All capacitance values are in μF , unless otherwise indicated.

pF	: μF (Pico farad)
C Cap	: Ceramic Capacitor
Chip Cap	: Chip Capacitor
Chip T Cap	: Chip Tantalum Capacitor
E Cap	: Electrolytic Capacitor
FM Cap	: Film Mica Capacitor
LL Cap	: Low Leak Current Electrolytic Capacitor
MM Cap	: Metalized Mylar Capacitor
MP Cap	: Metalized Paper Capacitor
MY Cap	: Mylar Capacitor
NP Cap	: Non-polar Capacitor
PC Cap	: Polycarbonate Capacitor
PP Cap	: Polypropylene Capacitor
PS Cap	: Polystyrol Capacitor
T Cap	: Tantalum Capacitor
TF Cap	: Thin Film Capacitor
TR Cap	: Trimmer Capacitor

NOTES:

- [M] indicates mechanical symbol number.
- [2 digits] indicates circuit board symbol number.
- "X " indicates quantities for use.

6.1 STANDARD PART NUMBER CODING

6.1.1 Screw coding

Standard screw part numbers are as follows.

Type of screw
(in capital letters)

1

Shape of screw head
(in capital letters)

2

Shape of thread
(in capital letters)

3

Material
(in capital letters)

4

5

Nominal diameter
(in figures)

6

7

Length
(in figures)

8

9

Surface treatment
(in capital letters)

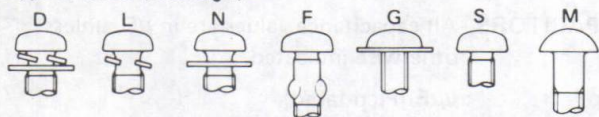
Type of screw (first digit)

- S Normal screws
- D Assembled machine screws (with plain and spring washers)
- L " (with spring washer)
- N " (with plain washer)
- F Feather screws
- G Washer head tapping screws
- M Wood screws

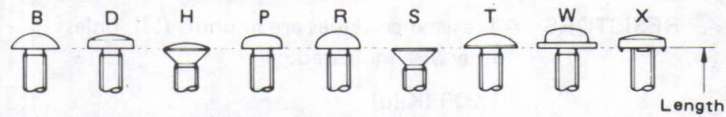
Shape of screw head (second digit)

- B Brazier head
- D Binding head
- H Oval countersunk head
- P Pan head
- R Round head
- S Flat head
- T Truss head
- W Washer head (machine screws)
- X Toothed head

—Type of screw (first digit) —



— Shape of screw head (second digit) —



Material (third digit)

- S Steel
- E Stainless steel
- C Cast iron
- U Copper
- B Brass
- P Phosphor bronze
- N Nickel silver
- Y Cast brass
- A Aluminum
- Z Zinc alloy
- K Polycarbonate

Shape of thread (fourth digit)

- P Cross recessed head screws
- (-) Slotted head machine screws
- X Slotted-cross recessed head machine screws
- K Cross recessed head machine screws for precision equipment (type 1)
- H " (type 3)
- A Cross recessed head tapping screws (type 1)
- B " (type 2)
- C " (type 3)
- E Cross recessed head special tapping screws (brand : evertight)
- F " (brand : P-tight)
- T " (brand : taptight)
- G " (brand : taptight)

— Shape of thread (fourth digit) —

Cross recessed head

Slotted head

Slotted-cross recessed head

P, (-), X, K, H

A

B

C

E

F

G

T

Nominal diameter (fifth and sixth digits)

The fifth and sixth digits are numbers indicating a nominal diameter or dimension. If the dimension exceeds 10 mm, three digits are used. The number indicates a nominal diameter or dimension, given in millimeters, multiplied by ten.

Length (seventh and eighth digits)

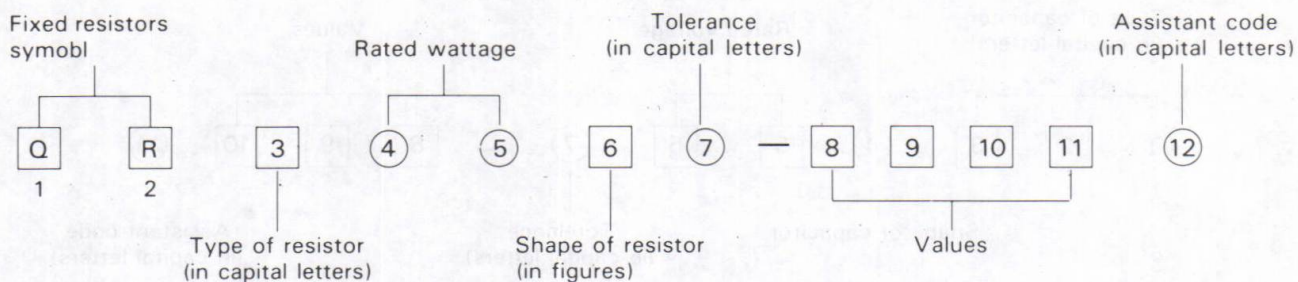
The seventh and eighth digits are numbers indicating length in millimeters. The preceding figure is zero when the dimension is smaller than 10 mm. For machine screws used in precision equipment whose length is given in units of 0.1 mm, the number indicates ten times the size of their length.

Surface treatment (ninth digit)

- Z Dichromate treatment after galvanizing (MFZn II-C)
- N Nickel plating (MFNi II, MFNi I)
- R Chromium plating (MBCr II, MBCr I)
- G Silver plating (SP4)
- B Black coating after plating
- F Blackening of iron (FB)
- M Blackening after galvanizing
- K Pickling of brass (PF2)
- P Phosphate treatment
- W Uni-chrome plating
- L Coating with transparent paint
- A Coloring red after galvanizing (MFZn II-C)
- C Coloring blue after galvanizing (MFZn II-C)
- T Coloring green after galvanizing (MFZn II-C)
- V Coloring purple after galvanizing (MFZn II-C)

6.1.2 Fixed resistor coding

Fixed resistor part numbers are as follows.



Type of resistor (third digit)	Rated wattage (fourth and fifth digits)	Tolerance (seventh digit)	Assistant code (twelfth digit)
C Composition resistors	A0 1/10 W	F $\pm 1\%$	A Small type
D Carbon film resistors	18 1/8 W	G $\pm 2\%$	B Small type
F Unflammable resistors	16 1/6 W	J $\pm 5\%$	S Small type
G Oxide metal film resistors	14 1/4 W	K $\pm 10\%$	Y Lead taping
H Fusible resistors	12 1/2 W	M $\pm 20\%$	Z Lead taping
M Metal plate resistors	01 1 W		
S Metal glazed resistors	02 2 W		
V Precision metal film resistors	03 3 W		
W Wire wound resistors	04 4 W		
X Metal film resistors	05 5 W		
Z Special resistors	06 6 W		
	07 7 W		
	75 7.5 W		
	08 8 W		
	10 10 W		
	15 15 W		
	A6 16 W		
	20 20 W		
	30 30 W		

Values (eighth — tenth or eleventh digits)
examples:
R47 0.47 Ω
4R7 4.7 Ω
470 47×10^0 47 Ω
471 47×10^1 470 Ω
472 47×10^2 4.7 k Ω
473 47×10^3 47 k Ω
474 47×10^4 470 k Ω
475 47×10^5 4.7 M Ω
QRV resistance shown by four digits:
4640 464×10^0 464 Ω
4641 464×10^1 4.64 k Ω
4642 464×10^2 46.4 k Ω

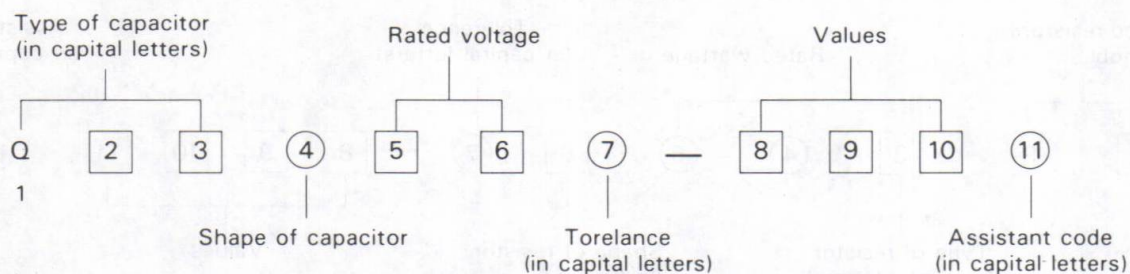
Shape of resistor (sixth digit)

Note: ■ marks are flame retardant resistor.

Type of resistor Shape of resistor	C	D	F	G	H	M	S	V	W	X
1										
2										
3										
4										
5									(L) type	
6										
7			Lug (B) type							
8			Lug (A) type					Chip		
9			Lug (C) type							

6.1.3 Fixed capacitor coding

Fixed capacitor part numbers are as follows.



Ceramic capacitors

Type of capacitor (first — third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Mono-direction	Kink lead	Axial lead	Axial forming lead	Chip
QCC	Ceramic	1		4	5	
QCD	High capacitance					A
QCF	High capacitance	1,4	3			8,A
QCS	Temperature compensation	1	3	4	5	8,A
QCT	Temperature compensation	Special coding				8,A
QCV	Ceramic			1	3	
QCX	Ceramic			1	3	
QCY	High capacitance	1,4	3	6	7	8,A
QCZ	Special type	Special coding				

Electrolytic capacitors

Type of capacitor (first-third digits)		Shape of capacitor (fourth digit)				
Symbol	Characteristics	Tubular	Mono-direction	Anti-stress	Forming	Snap-in
QEB	Low leakage		4	5	6	
QEC	Low leakage		4,8,A	9,B	6,C	
QEE	Tantalum (normal)		4	5	6	
	Tantalum (small)		8			
QEF	Chip tantalum	8 (chip type)				
QEG	Low impedance		4			
QEK	Miniature type		4	5	6	
QEL	Small type		4	5	6	7
QEM	Small type		4	5	6	
QEN	Non-polar	2	4	5	6	
QEP	Non-polar (small)		4,A	5,B	6,C	
QER	Miniature type		4	5	6	
QET	Small type	2	4	5,B	6,C	7
QEU	Small type		4	5	6	
QEV	Small type		4		6	7
QEW	Normal	2	4	5	6	7

Paper film capacitors

Type of capacitor (first — third digits)		Shape of capacitor (fourth digit)					
		Tubular	Normal		Flame retardant		
Symbol	Characteristics			Mono-direction	Kink lead	Mono-direction	Kink lead
QFA	Metalized polypropylene					7	
QFE	Metalized mylar					5	
QFF	Film mica			4			
QFG	Polypropylene film			4	8		
QFH	Metalized mylar	2		4	3	5,7	6
QFJ	Mylar (special)			4			
QFK	Metalized mylar (small)					5	
QFM	Mylar	2		4	3,7	5	6
QFN	Mylar (small)			4	3		
QFP	Polypropylene			4	3,8		
QFS	Polystyrole	2		4	3		
QFV	Thin film			4	8		
QFZ	Special type	Special coding					

Rated voltage (fifth and sixth digits)

Fifth digit \ Sixth digit													
	A	B	C	D	E	F	G	H	J	K	V	W	X
0						3.15	4.0		6.3				
1	10		16	20	25		40	50	63	80	35		
2	100	125	160	200	250	315	400	500	630		350	450	600
3	1000	1250		2000				5000					

Tolerance (seventh digit)

A	+100 % -10 %	M	±20 %
F	±1 %	N	±30 %
G	±2 %	P	+100 % -0 %
H	+50 % -10 %	R	+30 % -10 %
J	±5 %	X	+40 % -20 %
K	±10 %	Z	+80 % -20 %

Values (eighth — tenth digits)

Example : Values are in picofarads

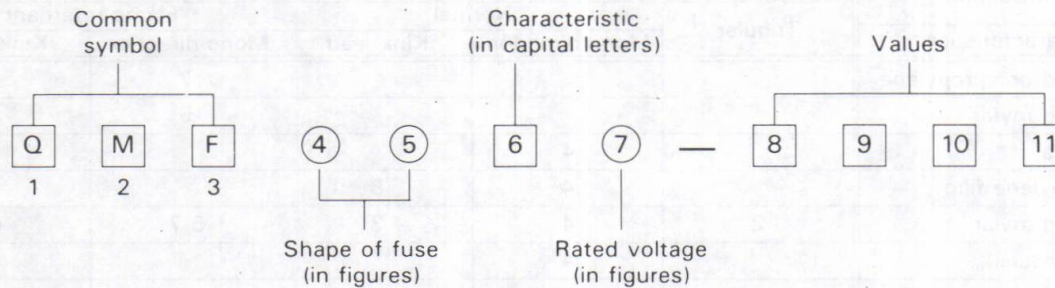
101	.....10×10^1 pF	100 pF
102	.....10×10^2 pF	1,000 pF (0.001 μ F)
103	.....10×10^3 pF	10,000 pF (0.01 μ F)
104	.....10×10^4 pF	100,000 pF (0.1 μ F)
105	.....10×10^5 pF	1 μ F
5R0	.....	5.0 pF

Assistant code (eleventh digit)

G	Small size
Z	Lead taping

6.1.4 Fuse coding

Standard fuse part numbers are as follows.



Shape of fuse

(fourth and fifth digits)

51	φ5.2 × 20 mm
60	φ6.4 × 30 mm
61	φ6.35 × 31.8 mm
63	φ6.4 × 30 mm with lead wires
66	φ6.35 × 31.8 mm with lead wires
00	Special type

Rated voltage

(seventh digit)

1	AC125 V
2	AC250 V
3	0.1 – 1 A : AC250 V 1.25 – 6.3 A : AC125 V

Values

(eighth-tenth or eleventh digits)

example:

R63	..... 0.63 A
1R0	..... 1.0 A
2R5	..... 2.5 A
100	..... 10 A
R315	..... 0.315 A
1R25	..... 1.25 A

Characteristics (sixth digit)

Symbol	Fusing Current	Fusing Time	Remarks
A	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
B	210 %	Within 30 min.	Regular fusible type (for SEMKO, Europe)
	275 %	0.05 – 2 sec.	
	400 %	0.01 – 0.3 sec.	
C	135 %	Within 1 hr.	Regular fusible type (for UL, Japan)
	200 %	Within 2 min.	
E	210 %	Within 2 min.	Anti-rush type (for Europe)
	275 %	0.6 – 10 sec.	
	400 %	0.15 – 3 sec.	
	1000 %	0.02 – 0.3 sec.	
J	135 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
M	135 %	Within 1 hr.	Regular fusible type (for UL)
	200 %	Within 2 min.	
R	160 %	Within 1 hr.	Regular fusible type
	200 %	Within 2 min.	
S	160 %	Within 1 hr.	Anti-rush type
	200 %	Within 2 min.	
	700 % – 2000 %	Within 0.01 sec.	
U	135 %	Within 1 hr.	Anti-rush type (for UL)
	200 %	Within 2 min.	
	800 % – 2000 %	Within 0.01 sec.	

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
.....						
			PACKING AND ACCESSORIES [M1]	5	—		OPERATION BOARD ASS'Y, REFER TO [03]
1	PQ31365-3		PACKING CASE, EG	6	—		IMAGER BOARD ASS'Y, REFER TO [21], [22]
	PQ31365-4		PACKING CASE, EK	7	—		EE & IND BOARD ASS'Y, REFER TO [24]
2	PQ20335		CUSHION(L), X2	8	—		VIDEO BOARD ASS'Y, REFER TO [23]
3	—		FINAL ASS'Y, REFER TO [M2]	9	—		—
4	PQM30021-64		POLY BAG, EG	10	—		REGULATOR BOARD ASS'Y, REFER TO [28]
	PUP30320-27		POLY BAG, EK				
5	PUP40329		SERIAL NO. STICKER, X2	11	—		CONTROL BOARD ASS'Y, REFER TO [26]
6	—		E. VIEWFINDER ASS'Y, REFER TO [M6]	12	—		OPTICAL ASS'Y, REFER TO [M5]
7	—		RF UNIT, RF-P1E, INCL. 27	13	—		DRUM ASS'Y, REFER TO [M3]
			REFER TO SERVICE MANUAL NO. 8361	14	—		TRIGGER BOARD ASS'Y, REFER TO [27]
△	8	PU59526	CABLE ASS'Y, EG	15	—		SKEW JUMP BOARD ASS'Y, REFER TO [12]
△		PU57546	CABLE ASS'Y (B), EK	16	—		END ALARM BOARD ASS'Y, REFER TO [13]
9	QPGA015-02505		POLY BAG	17	—		PAL SUB BOARD ASS'Y, REFER TO [29]
△	10	PU30425-854	INSTRUCTION BOOK, EG	18	—		—
△		PU30425-860	INSTRUCTION BOOK, EK	19	—		—
				20	—		—
11	BT-20060		GUARANTY CARD, EK ONLY	△	21	PQ10304E-13	LOWER CASE ASS'Y, INCL. 91—105
△	12	PU30425-655-1	INSTRUCTION BOOK, FOR C-P3U	22		PQ42559-1-2	SHOE SPRING
13	BT-20066		GUARANTY CARD, EK ONLY	23		PQ31190-1-5	SHOE
14	QPGA025-03505		POLY BAG, EG	24		SSSP2010M	SCREW, X2, SHOE
	PQM30023-5		POLY BAG, EK	25		PU59004-1-1	ZOOM SWITCH
15	—		CASSETTE TAPE, EC-30	△	26	PQ20269B	SIDE PANEL ASS'Y
16	—		BATTERY PACK, NB-P7U	27		PQ42246	BUTTON (2), FULL AUTO
17	—		AC POWER ADAPTER, AA-V2EG/EK, REFER TO SERVICE MANUAL NO. 8424	28		PQ42247	BUTTON (3), X2, FILTER, FOCUS
18	PQ31233A-9		SHOE ADAPTER ASS'Y	△	29	PQ10305D	FRONT PANEL ASS'Y
19	—		SHOULDER STRAP, VU-V17U, REFER TO SERVICE MANUAL NO. 8458 (4/5)	30		PQ42057-1-4	PLAY BUTTON
20	—		CARRYING CASE, CB-V50U, REFER TO SERVICE MANUAL NO. 8458 (3/5)				
△	21	PU36158-1-1	DBP INF SHEET, EG ONLY	31		PQ42058-1-6	STOP BUTTON
22	PQ42620-1-1		MIC PROTECTOR	32		PQ42059-1-2	FF BUTTON
23	UM-3DJ		BATTERY, R6 TYPE	33		PQ42060-1-2	REW BUTTON
24	PQM30021-48		POLY BAG	34		PQ42061-1-2	VF MODE BUTTON
25	—		CASSETTE ADAPTER, C-P3U	35		PQ42062-1-2	PAUSE BUTTON
26	—		—	36		PQ42066	REC BUTTON
△	27	PU55906	AERIAL CABLE ASS'Y	37		PQ42251-1-3	POWER BUTTON
28	PQ42594B		PAD ASS'Y	38		PQ42252	SLIDE KNOB, SP/LP
△	29	PU57548	CABLE ASS'Y (P), EG ONLY	39		PQ31313A	MIC JACK COVER ASS'Y
30	QPGA015-02505		POLY BAG, EG ONLY	40		PU56808-2	JACK ASS'Y
.....				41	—		—
			FINAL ASSEMBLY [M2]	42		SSSP2004M	SCREW, X 2
1	—		MECHANISM ASS'Y, REFER TO [M3], [M4]	43		PQ31095A-3	BASE ASS'Y
2	—		CASSETTE HOUSING ASS'Y, REFER TO [M7]	44		SSSP2604M	SCREW, X4, BASE ASS'Y
3	—		Y/C BOARD ASS'Y, REFER TO [02]	△	45	PQ10306B-2	UPPER CASE ASS'Y, INCL. 46—48
4	—		MAIN BOARD ASS'Y, REFER TO [01]	46		PQ42253-2	REC REV BUTTON
				47		PQ42239	HOOK (1)
				48		SSSP2004M	SCREW, X2, UPPER CASE
				49		PU59006-2	TAPE COUNTER
				△	50	PQ31332E-9	CASSETTE COVER ASS'Y, INCL. 51
				51		PQ31428-2	LABEL
				52		SDSP2004M	SCREW, X2, CASSETTE COVER
				53		SSSP2004M	SCREW, PLATE HOOK, X 3
				54		SSSP2010M	SCREW, PLATE
				55		SSSG2608M	TAPPING SCREW, X 3
				56		SDSG2606Z	TAPPING SCREW, SIDE PANEL
				57		PQ31198	TRIGGER BUTTON
				58	—		RATING LABEL

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
△	59	PQ31340-4	BATTERY CAUTION LABEL
	60	PU58213	VMP CAP
	61	SPSG2620Z	TAPPING SCREW, X3, MAIN DECK
	62	PQ31195	BOARD HOLDER
	63	SDSF2608Z	TAPPING SCREW, BOARD HOLDER
	64	PQ31196-1-4	BOARD HOLDER
	65	SDSF2608Z	TAPPING SCREW, SHIELD PLATE
	66	PQ42288	PLATE NUT (3)
	67	SDSF2005Z	TAPPING SCREW, PLATE NUT (3)
	68	SDSF2005Z	TAPPING SCREW, CONTROL BOARD, X 3
	69	SDSF2005Z	TAPPING SCREW, X5, OPERATION BOARD
	70	—	—
	71	SPSH1740M	SCREW
	72	—	—
	73	—	—
	74	—	FUSE, REFER TO [01], F1
	75	SPSH1740M	SCREW, X4, CASSETTE HOUSING
	76	SPSN1740M	SCREW, MAIN BOARD
	77	SDSF2608Z	TAPPING SCREW, DC-DC CONVERTER
	78	PU36078-1-3	SHIELD PLATE, CAMERA ASS'Y
	79	PU59008	8PIN CONNECTOR, E. VF ASS'Y
	80	PU59005C	MICROPHONE
	OR	PU59451	MICROPHONE
△	81	PU59143-3	DC-DC CONVERTER
	82	—	—
△	83	PU54705-2	CAUTION LABEL
	84	PU59232-2	FEATURE LABEL
	85	—	—
	86	PQ42686	SHIELD PLATE
	87	PQ31470	SHIELD PLATE
	88	PQ42837	SPACER
	89	PU58339	SHOE EARTH
	90	PQ42548-4	PLATE
	91	PQ31199	TRIGGER BUTTON COVER
	92	PQ42232	SHOE BASE
	93	SSSP2004M	SCREW, X 2
	94	PQ42516	SHEET, X 2
	95	PQ42233-1-1	TERMINAL PLATE, X 2
	96	PQ42240	HOOK (2)
	97	SSSP2004M	SCREW
	98	PQ42243	PLATE NUT (2)
	99	SSSP2004M	SCREW
	100	PQ42554	GRIP RUBBER
	101	PQ31231B-3	GRIP BELT ASS'Y
	102	SDSG2008Z	TAPPING SCREW, X4, GRIP BELT ASS'Y
	103	—	—
	104	PQ42496	CCD MARK
	105	PQ42420	W. FILTER
	106	PQM30029-86	SPACER, X2
	107	PQ41450	SCREW, SHIELD PLATE
	108	SDSF2604Z	TAPPING SCREW, PAL SUB BOARD
	109	—	NEMKO LABEL
△	110	PQM30044-15	DBP LABEL
	111	SPSH1740M	SCREW, X2, E. ALARM BOARD

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
			MECHANISM (1) ASSEMBLY [M3]
	1	—	MAIN DECK ASS'Y
△	2	PU58720G-1	MODE CONTROL MOTOR ASS'Y
	3	SPSH1740M	SCREW, X 2
	4	PQ41059B-5	PINCH ROLLER BAR ASS'Y
	5	REE2500	E RING
	6	PQ41063A-3	PINCH ROLLER ARM SUB ASS'Y
	7	PQ42302A	PINCH ROLLER ASS'Y
	8	SPSH1720M	SCREW
	9	REE2500	E RING
	10	PQ42095A	BRAKE CONTROL ARM ASS'Y
	11	PQM30018-21	SPACER
	12	PQ42097A-5	HEAD ARM ASS'Y
	13	PQ42107	A/C HEAD BASE
	14	PQ42682	HEAD SPRING
	15	PU58722-1-1	A/C HEAD
	16	SPSK1740M	SCREW, X 3
	17	PQ40620-1-4	SPECIAL SCREW, X 2
	18	PQ42112	TORSION SPRING
	19	Q03093-825	WASHER
	20	PQM30002-111	SPRING
	21	PQM30018-21	SPACER
	22	PQ42457A-3	CONTROL CAM ASS'Y
	23	Q03093-825	WASHER
	24	PU58749-2-6	MODE CONTROL SWITCH ASS'Y
	25	PQ42856	MIDDLE POLE STOPPER
	26	PQ42527	COVER (A/C HEAD)
	27	SPSH1740M	SCREW, X2
	28	PQ42120A	EJECT LEVER ASS'Y
	29	PQM30017-25	SLIT WASHER
	30	PQ42134A-2	MIDDLE POLE ASS'Y
	31	SPSH1740M	SCREW
	32	PU58724	CLUTCH GEAR (S)
	33	PQM30017-15	SLIT WASHER
	34	PU58725-1-1	CLUTCH GEAR (T)
	35	PQM30017-15	SLIT WASHER
	36	PQ42153-1-3	SUPPLY IDLER GEAR
	37	PQM30017-15	SLIT WASHER
	38	PU58726	SUPPLY REEL DISK
	39	PQM30018-40	SPACER
	40	PQM30017-34	SLIT WASHER
	41	PQM30002-177	SPRING
	42	SPSH1780N	SCREW
	43	PQ42155A-2	TENSION ARM SUB ASS'Y
	44	PQ42158A	TENSION BAND ASS'Y
	45	PQM30001-215	SPRING
	46	PQ42163	TENSION BAND PLATE
	47	PQM30001-202	TENSION SPRING
	48	PQM30013-7-2	FLANGE COLLAR
	49	PQM30017-15	SLIT WASHER
	50	SPSH1740M	SCREW
	51	PQ42164	TAKE-UP REEL GEAR
	52	Q03093-829	WASHER
	53	PQM30017-25	SLIT WASHER
	54	PU58729-1-1	IDLER ARM
	55	PQ42165-1-2	TORSION SPRING
	56	PQM30017-16	SLIT WASHER

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#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
.....			
			OPTICAL ASSEMBLY [M5]
1		PU58924	HOOD
2		PQ31311	HOOD CAP
3		PQ42477	STRING
4		UPD3525D	IC, IMAGER (2) BOARD
5		PQ42338	INSULATOR
6		PQ31191	IMAGER HOLDER
7		—	—
8		DPSP2008Z	SCREW, X 2
9		PQ42339	SPACER RUBBER
10		PU58927	OPTICAL LPF
11		PQ31192	OPTICAL LPF HOLDER
12		SPSK2004F	MINI SCREW, X 3
13		SPSP2004Z	SCREW, X 2
14		PQ20297	R SHIELD CASE
15		PQ20298	L SHIELD CASE
16		SDSA2604Z	TAPPING SCREW, X 2
17		—	—
18		—	IMAGER (1) BOARD ASS'Y, REFER TO [21]
19		—	IMAGER (2) BOARD ASS'Y, REFER TO [22]
⚠		20 PU58923	OPTICAL BLOCK ASS'Y, INCL. 1 AND 21–33
⚠		21 PU58923-001	IRIS DRIVER UNIT
⚠		22 PU58923-002	ZOOM MOTOR UNIT
⚠		23 PU58923-003	AF MOTOR UNIT
		24 PU58923-015	FOCUSING RING
		25 PU58164-031	TAPPING SCREW
		26 PU58923-022	MOTOR RUBBER, X 4
		27 PU58923-023	TAPPING SCREW, X 4
		28 PU58923-024	ZOOM MOTOR BRACKET
		29 PU58923-025	AF MOTOR BRACKET
		30 PU58923-032	AF SENSOR UNIT
		31 PU58923-033	TAPPING SCREW, X 3
		32 PU58923-017	TAPPING SCREW, X 2
		33 PU58923-026	TAPPING SCREW, X 2
.....			
			ELECTRONIC VIEWFINDER ASSEMBLY [M6]
1		PU59349	TOP CASE
2		PU59366	BOTTOM CASE
3		PU59090-4	CAUTION LABEL, HIGH VOLTAGE CAUTION
4		PU59524-2	NAME LABEL
5		PU59090-6	BUSHING
6		PU59090-7	PLATE
7		PU59090-8	SPACER
8		PU59090-9	TAPPING SCREW
9		PU59090-10	BRACKET
10		PU59090-11	TAPPING SCREW, X 2

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
11		PU59368	SERIAL NO. LABEL
12		PU59522	WARNING LABEL
13		—	—
14		PU59090-15	TAPPING SCREW, X 4
15		PU59090-16	LENS ASS'Y
16		PU59090-17	LENS RUBBER
17		PU59354-2	NAME PLATE
18		PU59090-20	CRT ASS'Y, INCL. 23, 24
19		—	E. VF (1) BOARD ASS'Y, REFER TO [30]
20		—	E. VF (2) BOARD ASS'Y, REFER TO [31]
21		PU59336B	E. VF BOARD ASS'Y, INCL. 19, 20, 25
22		PU59090-24	INSULATOR
23		—	DEFLECTION YOKE, REFER TO PAGE 6-35
24		—	CRT, INCL. 26, REFER TO PAGE 6-35
25		PU59090-29	VIEWFINDER CABLE
26		PU59090-33	TERMINAL COVER, HIGH VOLTAGE
27		PU59523	X-RAY LABEL
⚠		— PU58762D	E. VF ASS'Y, INCL. 1–27
.....			
			CASSETTE HOUSING ASSEMBLY [M7]
1		PQ31064B	CASSETTE HOLDER ASS'Y
2		PQ42416-1-2	HOLDER STAY (1)
3		PQ42105	PUSH PLATE, X 2
4		SSSK1720M	SCREW, X 4
5		PQ42109A	HOLDER SHAFT ASS'Y
6		PQ40565	ATTACHMENT
7		PQ41450-2	SCREW
8		PQ40566-5	SPRING, RIGHT
9		PQ40566-6	SPRING, LEFT
10		PQ42130A-1-1	LEFT BRACKET ASS'Y
11		PQ42182	SUB ARM, RIGHT
12		REE2000	E RING, X 6
13		PQ42188A	RIGHT BRACKET ASS'Y
14		PU56781	DAMPER
15		LPSP2006Z	SCREW
16		PQ40579	SECOND GEAR
17		PQM30017-14	SLIT WASHER
18		PQ42193A	OPEN DOOR ASS'Y
19		PQ42084A	HOLDER STAY ASS'Y
20		PQ41532	TORSION SPRING
21		PQM30017-16	SLIT WASHER
22		REE1500	E RING
23		PUS28324C	CASSETTE HOUSING ASS'Y, INCL. 1–22

#	△	REF.NO.	PART NO.	PART NAME, DESCRIPTION
.....				
			PU11348E-2-C	MAIN BOARD ASS'Y [01]
- REGULATOR SECTION -				
△	IC1		S-81250AG	INTEGRATED CIRCUIT
	Q1		DTA124EK	CHIP DIGITAL TRANSISTOR
		OR	UN2112	CHIP DIGITAL TRANSISTOR
	Q2		DTA124EK	CHIP DIGITAL TRANSISTOR
		OR	UN2112	CHIP DIGITAL TRANSISTOR
	Q3		2SD601	CHIP TRANSISTOR
	Q4		2SD601	CHIP TRANSISTOR
	D1		ERA81-004	DIODE
	D2		RD3.9M-T1B	CHIP ZENER DIODE
	D3		RD5.6M-T2B	CHIP ZENER DIODE
	D4		MA151WK	CHIP DIODE
		OR	DAN202K	CHIP DIODE
	D5		MA151WK	CHIP DIODE
		OR	DAN202K	CHIP DIODE
	R1		QRD167J-125	CR
	R2		QRSA08J-684YN	CHIP R
	R3		QRSA08J-100YN	CHIP R
	R4		QRSA08J-121YN	CHIP R
	R5		QRSA08J-271YN	CHIP R
	R6		QRSA08J-102YN	CHIP R
	R7		QRSA08J-102YN	CHIP R
	R8		QRSA08J-125YN	CHIP R
	C1		-	-
	C2		QEK41CM-476	E CAP
	C3		QEK41CM-476	E CAP
	C4		QED41CM-476	E CAP
	C5		QED41CM-476	E CAP
	C6		QED41AM-826	E CAP
	C7		QED41AM-826	E CAP
	C8		QEMA1AM-107	E CAP
△	RY1		PU56400-2	RELAY
	JACK1		PU57179	DC JACK
△	F1		QMF51E2-3R15	FUSE
				(NOT INCL. IN MAIN BOARD ASS'Y)
△	FC1		PU57505	FUSE CLIP, FOR F1, X2

#	△	REF.NO.	PART NO.	PART NAME, DESCRIPTION
△	CP1		ICP-F15	CIRCUIT PROTECTOR
△	CP2		ICP-F20	CIRCUIT PROTECTOR
△	CP3		ICP-F20	CIRCUIT PROTECTOR
△	CP4		ICP-F15	CIRCUIT PROTECTOR
△	CP5		ICP-F20	CIRCUIT PROTECTOR
	TP		PU56278	TEST PIN, TP1, 2
△	DC CONV		PU58603-2-1	DC-DC CONVERTER
- SERVO SECTION -				
	IC101		BA8526K	FLAT IC
		OR	BA8527K	FLAT IC
	IC102		BAF6305	FLAT IC
	IC103		PU22441A-2-C	F/V MOD. (JC001)
	IC104		M51797FP	FLAT IC
	IC105		M50252FP	FLAT IC
	IC106		M51722FP	FLAT IC
	IC107		M54643L	INTEGRATED CIRCUIT
	IC108		AFC74A001X1	INTEGRATED CIRCUIT
	Q101		2SK621	CHIP DIGITAL FET
	Q102		-	-
	Q103		-	-
	Q104		2SD601	CHIP TRANSISTOR
		OR	2SC2412K	CHIP TRANSISTOR
	Q105		2SB709	CHIP TRANSISTOR
		OR	2SA1037K	CHIP TRANSISTOR
	Q106		2SB709	CHIP TRANSISTOR
		OR	2SA1037K	CHIP TRANSISTOR
	Q107		2SD601	CHIP TRANSISTOR
		OR	2SC2412K	CHIP TRANSISTOR
	Q108		-	-
	Q109		-	-
	Q110		2SB709	CHIP TRANSISTOR
		OR	2SA1037K	CHIP TRANSISTOR
	Q111		2SK621	CHIP DIGITAL FET
	Q112		2SK621	CHIP DIGITAL FET
	Q113		2SK621	CHIP DIGITAL FET
	Q114		-	-
	Q115		2SA1365-T1G	CHIP TRANSISTOR
		OR	2SB710S	CHIP TRANSISTOR
		OR	2SA1036KT-96R	CHIP TRANSISTOR
		OR	2SB624-T18BV5	CHIP TRANSISTOR
	Q116		2SA1365-T1G	CHIP TRANSISTOR
		OR	2SA1036KT-96R	CHIP TRANSISTOR
		OR	2SB624-T18BV5	CHIP TRANSISTOR
		OR	2SB710S	CHIP TRANSISTOR
	Q117		2SA1365-T2G	CHIP TRANSISTOR
		OR	2SA1036KT-97R	CHIP TRANSISTOR
		OR	2SB624-T28BV5	CHIP TRANSISTOR
		OR	2SB710S	CHIP TRANSISTOR
	Q118		2SA1365-T2G	CHIP TRANSISTOR
		OR	2SA1036KT-97R	CHIP TRANSISTOR
		OR	2SB624-T28BV5	CHIP TRANSISTOR
		OR	2SB710S	CHIP TRANSISTOR

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
	Q119	2SK621	CHIP DIGITAL FET
	Q120	2SK621	CHIP DIGITAL FET
	Q121	2S8709	CHIP TRANSISTOR
		OR 2SA1037K	CHIP TRANSISTOR
	Q122	2SD601	CHIP TRANSISTOR
		OR 2SC2412K	CHIP TRANSISTOR
	D101	DA204K	CHIP DIODE
	D102	—	—
	D103	—	—
	D104	DAP202K	CHIP DIODE
	R101	QRSA08J-103YN	CHIP R
	R102	QRSA08J-103YN	CHIP R
	R103	—	—
	R104	—	—
	R105	PU59237-224	CHIP VR, PB SW POINT
		OR PU57816-2-224	CHIP VR
		OR QVZ3606-224	CHIP VR
		OR PU59456-224	CHIP VR
	R106	QRSA08J-184YN	CHIP R
	R107	—	—
	R108	QRSA08J-104YN	CHIP R
	R109	PU59237-683	CHIP VR, REC SW POINT
		OR PU57816-2-683	CHIP VR
		OR PU59456-683	CHIP VR
	R110	QRSA08J-104YN	CHIP R
	R111	PU59237-683	CHIP VR, EP CTL DELAY
		OR PU57816-2-683	CHIP VR
		OR PU59456-683	CHIP VR
	R112	QRSA08J-124YN	CHIP R
	R113	PU59237-683	CHIP VR, SP CTL DELAY
		OR PU57816-2-683	CHIP VR
		OR PU59456-683	CHIP VR
	R114	QRSA08J-124YN	CHIP R
	R115	—	—
	R118	—	—
	R119	—	—
	R120	QRSA08J-473YN	CHIP R
	R121	QRSA08F-224YN	CHIP R
	R122	QRSA08F-153YN	CHIP R
	R123	QRSA08J-104YN	CHIP R
	R124	QRSA08J-334YN	CHIP R
	R125	QRSA08J-102YN	CHIP R
	R126	—	—
	R127	—	—
	R128	QRSA08J-561YN	CHIP R
	R129	QRSA08J-105YN	CHIP R
	R130	QRSA08J-104YN	CHIP R
	R131	QRSA08J-221YN	CHIP R
	R132	QRSA08J-102YN	CHIP R
	R133	QRSA08J-105YN	CHIP R
	R134	QRSA08J-223YN	CHIP R
	R135	QRSA08J-102YN	CHIP R
	R136	QRSA08J-103YN	CHIP R

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
	R137	QRSA08J-103YN	CHIP R
	R138	—	—
	R139	—	—
	R140	—	—
	R141	—	—
	R142	—	—
	R143	—	—
	R144	—	—
	R145	—	—
	R146	—	—
	R147	—	—
	R148	—	—
	R149	QRSA08J-105YN	CHIP R
	R150	QRSA08J-224YN	CHIP R
	R151	QRSA08J-683YN	CHIP R
	R152	QRSA08J-223YN	CHIP R
	R153	—	—
	R154	QRSA08J-105YN	CHIP R
	R155	QRSA08J-224YN	CHIP R
	R156	—	—
	R157	QRSA08J-103YN	CHIP R
	R158	QRSA08J-105YN	CHIP R
	R159	QRSA08J-224YN	CHIP R
	R160	QRSA08J-473YN	CHIP R
	R161	QRSA08J-393YN	CHIP R
	R162	QRSA08J-105YN	CHIP R
	R163	QRSA08J-154YN	CHIP R
	R164	QRSA08J-334YN	CHIP R
	R165	QRSA08J-184YN	CHIP R
	R166	QRSA08J-334YN	CHIP R
	R167	QRSA08J-104YN	CHIP R
	R168	QRSA08J-563YN	CHIP R
	R169	QRSA08J-104YN	CHIP R
	R170	QRSA08J-474YN	CHIP R
	R171	—	—
	R172	—	—
	R173	—	—
	R174	QRSA08J-182YN	CHIP R
	R175	QRSA08J-221YN	CHIP R
	R176	QRSA08J-221YN	CHIP R
	R177	QRSA08J-472YN	CHIP R
	R178	QRSA08J-183YN	CHIP R
	R179	QRSA08J-333YN	CHIP R
	R180	QRSA08J-183YN	CHIP R
	R181	QRSA08J-223YN	CHIP R
	R182	QVZ3606-333	CHIP VR, TRACKING PRESET
	R183	QRSA08J-102YN	CHIP R
	R184	QRSA08J-102YN	CHIP R
	R185	PU56399-4	VR, TRACKING VR, 500 K
	R186	—	—
	R187	PU59237-333	CHIP VR, CAP. SAMPLING
		OR PU57816-2-333	CHIP VR
		OR PU59456-333	CHIP VR
	R188	QRSA08J-153YN	CHIP R
	R189	QRSA08J-822YN	CHIP R
	R190	QRSA08J-333YN	CHIP R
	R191	—	—
	R192	QRSA08J-102YN	CHIP R
	R193	QRSA08J-473YN	CHIP R

△ REF. NO. PART NO. PART NAME, DESCRIPTION

R194	QRSA08J-105YN	CHIP R
R195	QRSA08J-105YN	CHIP R
R196	QRSA08J-103YN	CHIP R
R197	QRSA08J-223YN	CHIP R
R198	QRSA08J-822YN	CHIP R
R199	QRSA08J-103YN	CHIP R
R200	QRSA08J-103YN	CHIP R
R201	QRSA08J-103YN	CHIP R
R202	QRSA08K-4R7YN	CHIP R
R203	QRSA08K-4R7YN	CHIP R
R204	QRSA08J-181YN	CHIP R
R205	QRSA08J-181YN	CHIP R
R206	QRSA08K-4R7YN	CHIP R
R207	QRSA08K-4R7YN	CHIP R
R208	QRSA08J-102YN	CHIP R
R209	—	—
R210	QRSA08J-103YN	CHIP R
R211	QRSA08J-223YN	CHIP R
R212	QRSA08J-102YN	CHIP R
R213	QRSA08J-104YN	CHIP R
R214	QRSA08J-472YN	CHIP R
R215	—	—
R216	QRSA08J-0R0Y	CHIP R
R217	—	—
R218	PU59237-103	CHIP VR, DRUM PULSE
	OR PU57816-2-103	CHIP VR
	OR PU59456-103	CHIP VR
R219	—	—
R220	—	—
R221	—	—
R222	—	—
R223	QRSA08J-223YN	CHIP R
R224	—	—
R225	—	—
R226	QRSA08J-332YN	CHIP R
R227	QRSA08J-332YN	CHIP R
R228	QRSA08J-332YN	CHIP R
R229	QRSA08J-332YN	CHIP R

TH101 ERT-D2FIK-154S THERMISTOR

B101	QRSA08J-0R0Y	CHIP R
B102	—	—
B103	—	—
B104	QRSA08J-0R0Y	CHIP R
B105	QRD161J-0R0	CR

C101	QCYA1HK-103	CHIP CAP
C102	QCYA1HK-103	CHIP CAP
C103	QER41EM-475	E CAP
C104	QFN41HJ-682	MY CAP
C105	QER41EM-475	E CAP
C106	QCSA1HJ-391	CHIP CAP
C107	QFJ41HJ-273	MY CAP
C108	QFZ9011-224	MP CAP
C109	QFG42AJ-333	PP CAP
C110	QFZ9011-124	MP CAP

△ REF. NO. PART NO. PART NAME, DESCRIPTION

C111	QEE81AM-226	T CAP
C112	QFJ41HJ-683	MY CAP
C113	QFZ9011-104	MP CAP
C114	QFJ41HJ-223	MY CAP
C115	QCDA1EM-333	CHIP CAP
C116	QCSA1HJ-391	CHIP CAP
C117	QCYA1HK-102	CHIP CAP
C118	QCSA1HJ-681	CHIP CAP
C119	QER40JM-107	E CAP
C120	QER41CM-106	E CAP

C121	QCSA1HJ-221	CHIP CAP
C122	QER41HM-105	E CAP
C123	QCYA1HK-103	CHIP CAP
C124	QER40JM-476	E CAP
C125	QCYA1HK-102	CHIP CAP
C126	QCFA1EZ-104	CHIP CAP
C127	QER40JM-476	E CAP

C128	—	—
C129	—	—
C130	—	—

C131	—	—
C132	—	—
C133	—	—
C134	—	—
C135	—	—

C136	QEL41EM-475	E CAP
C137	QEL41EM-475	E CAP
C138	—	—
C139	QFZ0095-104	MP CAP
C140	—	—

C141	QEL40CM-106	E CAP
C142	QEL40CM-106	E CAP
C143	QFZ9011-334	MP CAP
C144	QCFA1EZ-104	CHIP CAP
C145	QER40JM-476	E CAP
C146	QER41CM-106	E CAP
C147	QER41CM-106	E CAP
C148	QER40JM-476	E CAP
C149	QFZ0095-393	MP CAP
C150	QFZ0096-104	MP CAP
	OR QFZ0095-104	MP CAP

C151	QER41HM-105	E CAP
C152	—	—
C153	QCYA1HK-102	CHIP CAP
C154	QER41HM-225	E CAP
C155	QCSA1HJ-331	CHIP CAP
C156	QCSA1HJ-101	CHIP CAP
C157	QCFA1EZ-104	CHIP CAP
C158	QCFA1EZ-104	CHIP CAP
C159	QEP41CM-106	NP CAP
C160	—	—

C161	QCYA1HK-102	CHIP CAP
C162	—	—
C163	QCYA1HK-332	CHIP CAP
C164	QCYA1EK-223	CHIP CAP
C165	QCYA1EK-223	CHIP CAP
C166	QCYA1EK-223	CHIP CAP
C167	QCYA1HK-102	CHIP CAP
C168	QCSA1HJ-151	CHIP CAP
C169	QCFA1EZ-104	CHIP CAP

C151	QER41HM-105	E CAP
C152	—	—
C153	QCYA1HK-102	CHIP CAP
C154	QER41HM-225	E CAP
C155	QCSA1HJ-331	CHIP CAP
C156	QCSA1HJ-101	CHIP CAP
C157	QCFA1EZ-104	CHIP CAP
C158	QCFA1EZ-104	CHIP CAP
C159	QEP41CM-106	NP CAP
C160	—	—

C161	QCYA1HK-102	CHIP CAP
C162	—	—
C163	QCYA1HK-332	CHIP CAP
C164	QCYA1EK-223	CHIP CAP
C165	QCYA1EK-223	CHIP CAP
C166	QCYA1EK-223	CHIP CAP
C167	QCYA1HK-102	CHIP CAP
C168	QCSA1HJ-151	CHIP CAP
C169	QCFA1EZ-104	CHIP CAP

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#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
	X'TAL 1	PU47701	CRYSTAL
	TP	PU56278	TEST PIN, TP101-117
- AUDIO SECTION -			
	IC301	AN3991NS	FLAT IC
	IC302	7VT10	INTEGRATED CIRCUIT
	Q301	-	-
	Q302	2SK621	CHIP DIGITAL FET
		OR DTC144EK	CHIP DIGITAL TRANSISTOR
		OR 2SC3395	CHIP DIGITAL TRANSISTOR
	Q303	2SK621	CHIP DIGITAL FET
		OR DTC144EK	CHIP DIGITAL TRANSISTOR
		OR 2SC3395	CHIP DIGITAL TRANSISTOR
	Q304	2SK621	CHIP DIGITAL FET
		OR DTC144EK	CHIP DIGITAL TRANSISTOR
		OR 2SC3395	CHIP DIGITAL TRANSISTOR
	Q305	2SK621	CHIP DIGITAL FET
		OR DTC144EK	CHIP DIGITAL TRANSISTOR
		OR 2SC3395	CHIP DIGITAL TRANSISTOR
	Q306	2SK621	CHIP DIGITAL FET
		OR DTC144EK	CHIP DIGITAL TRANSISTOR
		OR 2SC3395	CHIP DIGITAL TRANSISTOR
	Q307	2SD601	CHIP TRANSISTOR
	Q308	2SD601	CHIP TRANSISTOR
	Q309	2SB709	CHIP TRANSISTOR
	Q310	DTA124EK	CHIP DIGITAL TRANSISTOR
		OR UN2112	CHIP DIGITAL TRANSISTOR
	Q311	2SK621	CHIP DIGITAL FET
		OR DTC144EK	CHIP DIGITAL TRANSISTOR
		OR 2SC3395	CHIP DIGITAL TRANSISTOR
	Q312	DTA124EK	CHIP DIGITAL TRANSISTOR
		OR UN2112	CHIP DIGITAL TRANSISTOR
	R301	QRSA08J-220YN	CHIP R
	R302	QRSA08J-103YN	CHIP R
	R303	QRSA08J-153YN	CHIP R
	R304	QRSA08J-223YN	CHIP R
	R305	QRSA08J-223YN	CHIP R
	R306	QRSA08J-121YN	CHIP R
	R307	QRSA08J-822YN	CHIP R
	R308	QRSA08J-103YN	CHIP R
	R309	QRSA08J-0R0Y	CHIP R
	R310	QRSA08J-0R0Y	CHIP R
	R311	QRSA08J-122YN	CHIP R
	R312	QRSA08J-561YN	CHIP R
	R313	QRSA08J-181YN	CHIP R
	R314	PU59237-103	CHIP VR, AUDIO REC LEVEL
		OR PU57816-2-103	CHIP VR
		OR PU59456-103	CHIP VR
	R315	QRSA08J-682YN	CHIP R
	R316	QRSA08J-472YN	CHIP R
	R317	QRSA08J-392YN	CHIP R
	R318	QRSA08J-103YN	CHIP R
	R319	QRSA08J-222YN	CHIP R
	R320	QRSA08J-0R0Y	CHIP R
	R321	QRSA08J-681YN	CHIP R
	R322	PU59237-222	CHIP VR, AUDIO PB LEVEL
		OR PU57816-2-222	CHIP VR
		OR PU59456-222	CHIP VR
	R323	QRSA08J-392YN	CHIP R
	R324	QRSA08J-124YN	CHIP R
	R325	QRSA08J-221YN	CHIP R
	R326	QRSA08J-103YN	CHIP R
	R327	QRSA08J-273YN	CHIP R
	R328	QRSA08J-102YN	CHIP R
	R329	QRSA08J-222YN	CHIP R
	R330	-	-
	R331	-	-
	R332	-	-
	R333	QRSA08J-105YN	CHIP R
	R334	QRSA08J-103YN	CHIP R
	R335	QRSA08J-560YN	CHIP R
	R336	QRSA08J-103YN	CHIP R
	R337	QRSA08J-102YN	CHIP R
	R338	QRSA08J-392YN	CHIP R
	R339	QRSA08J-102YN	CHIP R
	R340	QRSA08J-823YN	CHIP R
	R341	QRSA08J-103YN	CHIP R
	R342	-	-
	R343	-	-
	R344	QVZ3606-683	CHIP VR, AUDIO BIAS LEVEL
	R345	QRSA08J-100YN	CHIP R
	R346	QRSA08J-123YN	CHIP R
	R347	-	-
	R348	QRSA08J-0R0Y	CHIP R
	R349	QRSA08J-103YN	CHIP R
	R350	QRSA08J-122YN	CHIP R
	R351	-	-
	R352	-	-
	R353	QRD163J-0R0	CR
	R354	QRD163J-0R0	CR
	C301	QER40JM-476	E CAP
	C302	-	-
	C303	QER41EM-335	E CAP
	C304	QER40JM-226	E CAP
	C305	QCSA1HJ-121	CHIP CAP
	C306	QER41HM-474	E CAP
	C307	QCYA1HK-332	CHIP CAP
	C308	QFZ9011-563	MP CAP
	C309	QCYA1HK-103	CHIP CAP
	C310	QER41EM-335	E CAP
	C311	QER41EM-335	E CAP
	C312	QER41HM-474	E CAP
	C313	QER41CM-106	E CAP
	C314	QCYA1EK-223	CHIP CAP
	C315	QER41HM-474	E CAP
	C316	QER41CM-106	E CAP
	C317	QER41HM-474	E CAP
	C318	QER40JM-336	E CAP
	C319	QCYA1HK-392	CHIP CAP
	C320	QCSA1HJ-681	CHIP CAP

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
C321	—	—	—	D401	MA151WK	CHIP DIODE	—
C322	—	—	—	D402	MA151WA	CHIP DIODE	—
C323	QER41HM-104	E CAP	—	D403	MA151WA	CHIP DIODE	—
C324	—	—	—	D404	MA151A	CHIP DIODE	—
C325	QER41HM-225	E CAP	—	D405	—	—	—
C326	QER40JM-226	E CAP	—	D406	—	—	—
C327	QER41HM-225	E CAP	—	D407	MA3075M	CHIP ZENER DIODE	—
C328	QER40JM-226	E CAP	—	OR MA3075H	CHIP ZENER DIODE	—	—
C329	QCSA1HJ-471	CHIP CAP	—	OR RD7.5M-T1B2	CHIP ZENER DIODE	—	—
C330	QCSA1HJ-471	CHIP CAP	—	OR RD7.5M-T1B3	CHIP ZENER DIODE	—	—
C331	QER41AM-336	E CAP	—	D408	MA151WA	CHIP DIODE	—
C332	QFZ9011-823	MP CAP	—	—	—	—	—
C333	QCSA1HJ-471	CHIP CAP	—	R401	QRSA08J-153YN	CHIP R	—
C334	QCYA1HK-822	CHIP CAP	—	R402	QRSA08J-153YN	CHIP R	—
C335	—	—	—	R403	QRSA08J-153YN	CHIP R	—
C336	QER41HM-224	E CAP	—	R404	QRSA08J-103YN	CHIP R	—
L301	PU56197-2	EQUALIZER	—	R405	QRSA08J-103YN	CHIP R	—
L302	PU58610	TRAP COIL	—	R406	QRSA08J-223YN	CHIP R	—
L303	PU55843-331K	CHIP COIL	—	R407	QRSA08J-153YN	CHIP R	—
L304	PU58611	OSC COIL	—	R408	—	—	—
L305	PU55843-101K	CHIP COIL	—	R409	—	—	—
TP	PU56278	TEST PIN, TP302-305	—	R410	—	—	—
— MECHACON SECTION —				R411	QRSA08J-102YN	CHIP R	—
△ IC401	HD6305Y0A76F	FLAT IC	—	R412	QRSA08J-102YN	CHIP R	—
IC402	—	—	—	R413	QRSA08J-102YN	CHIP R	—
IC403	MN74HC244S	FLAT IC	—	R414	QRSA08J-105YN	CHIP R	—
OR SN74HC244NS	FLAT IC	—	—	R415	QRSA08J-104YN	CHIP R	—
IC404	MN74HC244S	FLAT IC	—	R416	QRSA08J-104YN	CHIP R	—
OR SN74HC244NS	FLAT IC	—	—	R417	QRSA08J-104YN	CHIP R	—
IC405	MN74HC244S	FLAT IC	—	R418	QRSA08J-104YN	CHIP R	—
OR SN74HC244NS	FLAT IC	—	—	R419	QRSA08J-104YN	CHIP R	—
IC406	BA6109U2	INTEGRATED CIRCUIT	—	R420	QRSA08J-104YN	CHIP R	—
IC407	AN6564NS	FLAT IC	—	R421	QRSA08J-104YN	CHIP R	—
IC408	MN4071BS	FLAT IC	—	R422	QRSA08J-104YN	CHIP R	—
IC409	MN4069UBS	FLAT IC	—	R423	QRSA08J-474YN	CHIP R	—
IC410	MN4011BS	FLAT IC	—	R424	QRSA08J-105YN	CHIP R	—
IC411	MN4081BS	FLAT IC	—	R425	QRSA08J-153YN	CHIP R	—
Q401	—	—	—	R426	QRSA08J-102YN	CHIP R	—
Q402	2SK621	CHIP DIGITAL FET	—	R427	QRSA08J-153YN	CHIP R	—
Q403	2SK621	CHIP DIGITAL FET	—	R428	QRSA08J-153YN	CHIP R	—
Q404	2SK621	CHIP DIGITAL FET	—	R429	QRSA08J-102YN	CHIP R	—
Q405	2SK621	CHIP DIGITAL FET	—	R430	QRSA08J-102YN	CHIP R	—
Q406	2SK621	CHIP DIGITAL FET	—	R431	QRSA08J-105YN	CHIP R	—
Q407	2SK621	CHIP DIGITAL FET	—	R432	—	—	—
Q408	2SK621	CHIP DIGITAL FET	—	R433	QRSA08J-474YN	CHIP R	—
Q409	2SK621	CHIP DIGITAL FET	—	R434	QRSA08J-123YN	CHIP R	—
Q410	2SK621	CHIP DIGITAL FET	—	R435	QRSA08J-224YN	CHIP R	—
Q411	2SK621	CHIP DIGITAL FET	—	R436	PU59237-154	CHIP VR, BATTERY ALARM	—
Q412	2SK621	CHIP DIGITAL FET	—	OR PU57816-2-154	CHIP VR	—	—
Q413	2SB709	CHIP TRANSISTOR	—	OR PU59456-154	CHIP VR	—	—
				R437	QRSA08J-184YN	CHIP R	—
				R438	QRSA08J-474YN	CHIP R	—
				R439	QRSA08J-823YN	CHIP R	—
				R440	QRSA08K-475YN	CHIP R	—
				R441	QRSA08J-103YN	CHIP R	—
				R442	QRSA08J-105YN	CHIP R	—
				R443	QRSA08J-103YN	CHIP R	—
				R444	QRSA08J-103YN	CHIP R	—
				R445	QRSA08J-104YN	CHIP R	—

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
R446		QRSA08J-181YN	CHIP R		R505		QRSA08J-103YN	CHIP R	
R447		QRSA08J-105YN	CHIP R		R506		QRSA08J-102YN	CHIP R	
R448		QRSA08J-684YN	CHIP R		R507		QRSA08J-102YN	CHIP R	
R449		QRSA08J-105YN	CHIP R		R508		QRSA08J-102YN	CHIP R	
R450		QRSA08J-102YN	CHIP R		R509		QRSA08J-102YN	CHIP R	
					R510		QRSA08J-125YN	CHIP R	
R451		QRSA08J-105YN	CHIP R		R511		QRSA08J-102YN	CHIP R	
R452		QRSA08J-125YN	CHIP R		R512		QRSA08J-102YN	CHIP R	
R453		QRSA08J-105YN	CHIP R		R513		QRSA08J-102YN	CHIP R	
R454		—	—		R514		QRSA08J-271YN	CHIP R	
R455		QRSA08J-153YN	CHIP R		R515		QRSA08J-102YN	CHIP R	
R456		QRSA08J-153YN	CHIP R						
R457		QRSA08J-153YN	CHIP R		C401		QCFA1EZ-104	CHIP CAP	
R458		—	—		C402		QCFA1EZ-104	CHIP CAP	
R459		QRSA08J-102YN	CHIP R		C403		—	—	
R460		—	—		C404		—	—	
					C405		—	—	
R461		QRSA08J-102YN	CHIP R		C406		QCFA1HZ-473	CHIP CAP	
R462		QRSA08J-102YN	CHIP R		C407		QCYA1HK-222	CHIP CAP	
R463		QRSA08J-102YN	CHIP R		C408		—	—	
R464		QRSA08J-564YN	CHIP R		C409		—	—	
R465		QRSA08J-104YN	CHIP R		C410		—	—	
R466		QRSA08J-225YN	CHIP R						
R467		QRSA08J-102YN	CHIP R		C411		—	—	
R468		QRSA08J-104YN	CHIP R		C412		QCFA1EZ-104	CHIP CAP	
R469		QRSA08J-102YN	CHIP R		C413		QER41HM-105	E CAP	
R470		QRSA08J-104YN	CHIP R		C414		QCSA1HJ-270	CHIP CAP	
					C415		QCSA1HJ-270	CHIP CAP	
R471		QRSA08J-102YN	CHIP R		C416		QCFA1EZ-104	CHIP CAP	
R472		QRSA08J-104YN	CHIP R		C417		QEF81AM-475	CHIP T CAP	
R473		QRSA08J-102YN	CHIP R		C418		QCYA1HK-103	CHIP CAP	
R474		QRSA08J-104YN	CHIP R		C419		QCFA1EZ-104	CHIP CAP	
R475		QRSA08J-102YN	CHIP R		C420		QCSA1HJ-561	CHIP CAP	
R476		—	—						
R477		QRSA08J-104YN	CHIP R		L401		PU59188-101K	CHIP COIL	
R478		QRSA08J-104YN	CHIP R						
R479		QRSA08J-222YN	CHIP R		CF401		PU58780	CERAMIC FILTER	
R480		QRSA08J-102YN	CHIP R						
					△ TH401		PU52108-2R2	POSISTOR	
R481		QRSA08J-102YN	CHIP R						
R482		QRSA08J-102YN	CHIP R		TP		PU56278	TEST PIN, TP401	
R483		QRSA08J-102YN	CHIP R						
R484		QRSA08J-102YN	CHIP R		SLD1		PQ42544	INSULATOR	
R485		QRSA08J-102YN	CHIP R						
R486		QRSA08J-102YN	CHIP R		CN1		PU58655-3	CAP. HOUSING	
R487		QRSA08J-102YN	CHIP R		CN2		PU58655-3	CAP. HOUSING	
R488		QRSA08J-103YN	CHIP R		CN3		PU58655-2	CAP. HOUSING	
R489		QRSA08J-103YN	CHIP R		CN4		PU58655-4	CAP. HOUSING	
R490		QRSA08J-103YN	CHIP R		CN5A		PU58655-7	CAP. HOUSING	
					CN6		PU58655-2	CAP. HOUSING	
R491		QRSA08J-103YN	CHIP R		CN7		PU58250-8	CAP. HOUSING	
R492		QRSA08J-472YN	CHIP R		CN8		PU58250-10	CAP. HOUSING	
R493		QRSA08J-472YN	CHIP R		CN9		PU58250-16	CAP. HOUSING	
R494		QRSA08J-103YN	CHIP R						
R495		QRSA08J-103YN	CHIP R						
R496		QRSA08J-102YN	CHIP R						
R497		QRDA08J-103YN	CHIP R						
R498		QRSA08J-223YN	CHIP R						
R499		QRSA08J-103YN	CHIP R						
R500		QRSA08J-223YN	CHIP R						
R501		QRSA08J-103YN	CHIP R						
R502		QRSA08J-223YN	CHIP R						
R503		QRSA08J-103YN	CHIP R						
R504		QRSA08J-223YN	CHIP R						

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
CN10A	PU58655-5	CAP. HOUSING	
CN10B	PU58253-7	CAP. HOUSING	
CN11	PU58250-10	CAP. HOUSING	
CN12	PU58250-10	CAP. HOUSING	
CN13	PU58655-7	CAP. HOUSING	
CN14	PU58655-2	CAP. HOUSING	
CN15	PU58655-3	CAP. HOUSING	
CN16	PU58655-2	CAP. HOUSING	
CN17	PU58655-5	CAP. HOUSING	
CN18	PU58655-14	CAP. HOUSING	
CN19	PU58655-4	CAP. HOUSING	
CN20	PU58655-4	CAP. HOUSING	
CN21	PU58655-3	CAP. HOUSING	
	PU36285A-C	TRACK SHIFT BOARD ASS'Y (NOT INCLUDED IN PU11348E-2-C OF MAIN BOARD ASS'Y)	
IC109	M5223FP	FLAT IC	
	OR UPC1251G	FLAT IC	
Q128	2SC2412K	CHIP TRANSISTOR	
	OR 2SD601	CHIP TRANSISTOR	
Q129	2SK621	CHIP DIGITAL FET	
R116	QRSA08J-184YN	CHIP R	
R117	QRSA08J-105YN	CHIP R	
R235	QRSA08J-273YN	CHIP R	
R236	QRSA08J-123YN	CHIP R	
R237	QRSA08J-102YN	CHIP R	
R238	QRSA08J-103YN	CHIP R	
B106	QRSA08J-0R0Y	CHIP R	
B107	QRD161J-0R0	CR	
	PU11506A1-02-C	Y/C BOARD ASS'Y [02]	
IC1	AN3212S	FLAT IC	
IC2	H8D7025	INTEGRATED CIRCUIT	
IC3	AN3323S	FLAT IC	
IC4	H8DN7026	INTEGRATED CIRCUIT	
IC5	BX7383	INTEGRATED CIRCUIT	

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
IC6	BA7241F	FLAT IC	
IC7	H8D7004B	FLAT IC	
IC8	H8D1927A	INTEGRATED CIRCUIT	
IC9	H8D7027	INTEGRATED CIRCUIT	
IC10	THE045A	INTEGRATED CIRCUIT	
IC11	BA7131F	FLAT IC	
Q1	DTC144EK	CHIP DIGITAL TRANSISTOR	
Q2	DTC144EK	CHIP DIGITAL TRANSISTOR	
Q3	2SC2412K	CHIP TRANSISTOR	
	OR 2SD601	CHIP TRANSISTOR	
Q4	2SC2412K	CHIP TRANSISTOR	
	OR 2SD601	CHIP TRANSISTOR	
Q5	DTC144EK	CHIP DIGITAL TRANSISTOR	
Q6	DTC144EK	CHIP DIGITAL TRANSISTOR	
Q7	DTC144EK	CHIP DIGITAL TRANSISTOR	
Q8	DTC144EK	CHIP DIGITAL TRANSISTOR	
Q9	2SC2412K	CHIP TRANSISTOR	
	OR 2SD601	CHIP TRANSISTOR	
Q10	2SC2412K	CHIP TRANSISTOR	
	OR 2SD601	CHIP TRANSISTOR	
Q11	DTC114YK	CHIP DIGITAL TRANSISTOR	
Q12	-	-	
Q13	-	-	
Q14	2SC2412K	CHIP TRANSISTOR	
	OR 2SD601	CHIP TRANSISTOR	
D1	DAN202K	CHIP DIODE	
	OR MA151WK	CHIP DIODE	
D2	DAN202K	CHIP DIODE	
	OR MA151WK	CHIP DIODE	
D3	DAN202K	CHIP DIODE	
	OR MA151WK	CHIP DIODE	
D4	DAN202K	CHIP DIODE	
	OR MA151WK	CHIP DIODE	
D5	DAN202K	CHIP DIODE	
	OR MA151WK	CHIP DIODE	
D6	DAN202K	CHIP DIODE	
	OR MA151WK	CHIP DIODE	
D7	DAN202K	CHIP DIODE	
	OR MA151WK	CHIP DIODE	
R1	PU59237-102	CHIP VR, REC FM LEVEL	
	OR PU59456-102	CHIP VR	
R2	PU59237-473	CHIP VR, WHITE CLIP	
	OR PU59456-473	CHIP VR	
R3	PU59237-473	CHIP VR, DARK CLIP	
	OR PU59456-473	CHIP VR	
R4	PU59237-153	CHIP VR, CARRIER	
	OR PU59456-153	CHIP VR	
R5	PU59237-103	CHIP VR, DEVIATION	
	OR PU59456-103	CHIP VR	
R6	PU59237-222	CHIP VR, NOISE CANCEL	
	OR PU59456-222	CHIP VR	
R7	PU59237-473	CHIP VR, Y LEVEL	
	OR PU59456-473	CHIP VR	
R8	PU59237-473	CHIP VR, REC GAIN	
	OR PU59456-473	CHIP VR	

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
R9			PU59237-102	CHIP VR, EE Y LEVEL	R62			QRSA08J-103YN	CHIP R
		OR	PU59456-102	CHIP VR	R63			QRSA08J-152YN	CHIP R
R10			PU59237-222	CHIP VR, VIDEO EQ	R64			QRSA08J-103YN	CHIP R
		OR	PU59456-222	CHIP VR	R65			QRSA08J-102YN	CHIP R
R11			PU59237-102	CHIP VR, EE BURST LEVEL	R66			QRSA08J-332YN	CHIP R
		OR	PU59456-102	CHIP VR	R67			QRSA08J-103YN	CHIP R
R12			PU59237-681	CHIP VR, REC COLOUR LEVEL	R68			QRSA08J-103YN	CHIP R
		OR	PU59456-681	CHIP VR	R69			QRSA08J-471YN	CHIP R
R13			PU59237-102	CHIP VR, BURST LEVEL	R70			QRSA08J-153YN	CHIP R
		OR	PU59456-102	CHIP VR	R71			—	—
R14			PU59237-473	CHIP VR, AFC	R72			QRSA08J-682YN	CHIP R
R15			PU59237-102	CHIP VR, PB COLOUR LEVEL	R73			QRSA08J-0R0Y	CHIP R
		OR	PU59456-102	CHIP VR	R74			QRSA08J-0R0Y	CHIP R
R16			QRSA08J-222YN	CHIP R	R75			QRSA08J-0R0Y	CHIP R
R17			QRSA08J-821YN	CHIP R	R76			QRSA08J-0R0Y	CHIP R
R18			QRSA08J-103YN	CHIP R	R77			QRSA08J-0R0Y	CHIP R
R19			QRSA08J-682YN	CHIP R	R78			QRSA08J-0R0Y	CHIP R
R20			QRSA08J-680YN	CHIP R	R79			QRSA08J-0R0Y	CHIP R
					R80			QRSA08J-223YN	CHIP R
R21			QRSA08J-473YN	CHIP R	R81			QRSA08J-153YN	CHIP R
R22			QRSA08J-152YN	CHIP R	R82			QRSA08J-122YN	CHIP R
R23			QRSA08J-562YN	CHIP R	R83			QRSA08J-102YN	CHIP R
R24			QRSA08J-332YN	CHIP R	R84			QRSA08J-122YN	CHIP R
R25			QRSA08J-821YN	CHIP R	R85			QRSA08J-393YN	CHIP R
R26			QRSA08J-562YN	CHIP R	R86			QRSA08J-102YN	CHIP R
R27			QRSA08J-272YN	CHIP R	R87			QRSA08J-152YN	CHIP R
R28			QRSA08J-393YN	CHIP R	R88			QRSA08J-0R0Y	CHIP R
R29			QRSA08J-223YN	CHIP R	R89			QRSA08J-0R0Y	CHIP R
R30			QRSA08J-102YN	CHIP R	R90			QRSA08J-0R0Y	CHIP R
					R91			QRSA08J-0R0Y	CHIP R
R31			QRSA08J-223YN	CHIP R	R92			QRSA08J-0R0Y	CHIP R
R32			QRSA08J-332YN	CHIP R	R93			QRSA08J-223YN	CHIP R
R33			QRSA08J-681YN	CHIP R					
R34			—	—					
R35			QRSA08J-822YN	CHIP R					
R36			QRSA08J-102YN	CHIP R					
R37			QRSA08J-561YN	CHIP R					
R38			QRSA08J-471YN	CHIP R					
R39			QRSA08J-471YN	CHIP R					
R40			QRSA08J-153YN	CHIP R					
R41			QRSA08J-562YN	CHIP R					
R42			QRSA08J-182YN	CHIP R					
R43			QRSA08J-222YN	CHIP R					
R44			QRSA08J-122YN	CHIP R					
R45			QRSA08J-272YN	CHIP R					
R46			QRSA08J-103YN	CHIP R					
R47			QRSA08J-103YN	CHIP R					
R48			QRSA08J-333YN	CHIP R					
R49			QRSA08J-473YN	CHIP R					
R50			QRSA08J-222YN	CHIP R					
R51			QRSA08J-393YN	CHIP R					
R52			QRSA08J-393YN	CHIP R					
R53			QRSA08J-0R0Y	CHIP R					
R54			QRSA08J-122YN	CHIP R					
R55			QRSA08J-122YN	CHIP R					
R56			QRSA08J-102YN	CHIP R					
R57			QRSA08J-0R0Y	CHIP R					
R58			QRSA08J-102YN	CHIP R					
R59			QRSA08J-331YN	CHIP R					
R60			QRSA08J-102YN	CHIP R					
R61			QRSA08J-0R0Y	CHIP R					

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
		C27	QCYA1HK-103	CHIP CAP		△	L12	PU58627-101K	CHIP COIL
		C28	QCSA1HJ-390	CHIP CAP		△		OR PU58201-101K	CHIP COIL
		C29	QCYA1HK-103	CHIP CAP		△	L13	PU58627-101K	CHIP COIL
		C30	QCSA1HJ-120	CHIP CAP		△		OR PU58201-101K	CHIP COIL
							L14	PU58627-220J	CHIP COIL
								OR PU58201-220J	CHIP COIL
		C31	QCYA1HK-103	CHIP CAP					
		C32	QCYA1HK-103	CHIP CAP					
		C33	QCYA1EK-223	CHIP CAP					
		C34	QCYA1HK-103	CHIP CAP					
		C35	ECEV0JV220	CHIP E CAP			DL1	PU59472	1H DELAY LINE
		C36	QCYA1HK-103	CHIP CAP			DL2	PU59473	2H COMB FILTER
		C37	QCYA1EK-223	CHIP CAP					
		C38	QCYA1HK-103	CHIP CAP					
		C39	ECEV1CV100	CHIP E CAP			LPF1	PU59474-3	CHIP LOW PASS FILTER
		C40	QEF80JM-475	CHIP T CAP			LPF2	PU59475-2	CHIP LOW PASS FILTER
							LPF3	PU59476-2	CHIP LOW PASS FILTER
		C41	QER41CM-106	E CAP					
		C42	ECEV1CV100	CHIP E CAP					
		C43	QCYA1HK-103	CHIP CAP					
		C44	ECEV1CV100	CHIP E CAP					
		C45	ECEV0JV220	CHIP E CAP			HPF1	PU59479-3	CHIP HIGH PASS FILTER
		C46	QCYA1HK-103	CHIP CAP					
		C47	QCYA1HK-103	CHIP CAP					
		C48	ECEV1CV100	CHIP E CAP			BPF1	PU59477	CHIP BAND PASS FILTER
		C49	QEF81AM-105	CHIP T CAP			BPF2	PU59478	CHIP BAND PASS FILTER
		C50	QCSA1HJ-470	CHIP CAP					
		C51	ECEV1CV100	CHIP E CAP					
		C52	QCSA1HJ-560	CHIP CAP			EQ1	PU59480-3	CHIP EQUALIZER
		C53	QCSA1HJ-680	CHIP CAP			EQ2	PU59031	FH TRAP COIL
		C54	QCYA1HK-103	CHIP CAP					
		C55	QCYA1HK-103	CHIP CAP					
		C56	QCYA1HK-103	CHIP CAP					
		C57	QCSA1HJ-330	CHIP CAP					
		C58	QCYA1HK-103	CHIP CAP		△	X1	PU31449-2	CRYSTAL
		C59	PU56274B-200	CHIP TR CAP					
		C60	QCYA1HK-103	CHIP CAP					
		C61	QCYA1HK-103	CHIP CAP			TP	PU56278	TEST PIN, TP1 - 15
		C62	QCYA1HK-103	CHIP CAP					
		C63	ECEV0JV220	CHIP E CAP					
		C64	QEF81AM-105	CHIP T CAP			SPC1	PQ42625	SPACER
		C65	-	-					
		C66	QEF81AM-105	CHIP T CAP					
		C67	-	-					
		C68	QCYA1HK-103	CHIP CAP			CN1	PU58655-2	CAP. HOUSING
							CN2	PU58655-2	CHP. HOUSING
							CN3	PU58251-10	CAP. HOUSING
							CN4	PU58251-10	CAP. HOUSING
							CN5	PU59636-12	CAP. HOUSING

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
R97		QRSA08J-473YN	CHIP R
R98		QRSA08J-103YN	CHIP R
R99		QRSA08J-155YN	CHIP R
R100		QRSA08J-0R0Y	CHIP R
		—	APC BOARD ASS'Y (INCLUDED IN PU11506A1-02-C OF Y/C BOARD ASS'Y)
D8		DAN202K	CHIP DIODE
D9		DAN202K	CHIP DIODE
R94		QRSA08J-103YN	CHIP R
R101		QRSA08J-0R0Y	CHIP R
R102		QRSA08J-0R0Y	CHIP R
.....			
		PU22200A-2-C	OPERATION BOARD ASS'Y [03]
IC1		TMS1035NSE	FLAT IC
IC2		MN4021BS	FLAT IC
Q1		2SK621	CHIP DIGITAL FET
Q2		—	—
Q3		2SK621	CHIP DIGITAL FET
Q4		2SK621	CHIP DIGITAL FET
Q5		2SK621	CHIP DIGITAL FET
Q6		—	—
Q7		DTA144EK	CHIP DIGITAL TRANSISTOR
Q8		2SK621	CHIP DIGITAL FET
D1		SLN-210VC74	LED
D2		SLN-210VC74	LED
D3		SLN-210VC74	LED
D4		SLN-210VC74	LED
D5		SLN-210VC74	LED
D6		SLN-210VC74	LED
D7		MA151A	CHIP DIODE
D8		DA204K	CHIP DIODE
D9		DA204K	CHIP DIODE
D10		—	—
D11		RD5.6M-T1B	CHIP ZENER DIODE
D12		RD5.6M-T2B	CHIP ZENER DIODE
D13		—	—
D14		MA151A	CHIP DIODE

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
R1		QRSA08J-473YN	CHIP R
R2		QRSA08J-473YN	CHIP R
R3		QRSA08J-473YN	CHIP R
R4		QRSA08J-473YN	CHIP R
R5		QRSA08J-473YN	CHIP R
R6		QRSA08J-104YN	CHIP R
R7		QRSA08J-473YN	CHIP R
R8		QRSA08J-473YN	CHIP R
R9		QRSA08J-473YN	CHIP R
R10		QRSA08J-102YN	CHIP R
R11		QRSA08J-102YN	CHIP R
R12		QRSA08J-102YN	CHIP R
R13		—	—
R14		QRSA08J-102YN	CHIP R
R15		QRSA08J-102YN	CHIP R
R16		QRSA08J-104YN	CHIP R
R17		QRSA08J-102YN	CHIP R
R18		—	—
R19		—	—
R20		—	—
R21		QRSA08J-102YN	CHIP R
R22		QRSA08J-103YN	CHIP R
R23		QRSA08J-102YN	CHIP R
R24		QRSA08J-102YN	CHIP R
R25		QRSA08J-102YN	CHIP R
R26		QRSA08J-102YN	CHIP R
R27		—	—
R28		QRSA08J-333YN	CHIP R
R29		QRSA08J-101YN	CHIP R
R30		QRSA08J-102YN	CHIP R
R31		QRD167J-750	CR
R32		QRD167J-750	CR
R33		QRSA08J-0R0Y	CHIP R
B1		QRSA08J-0R0Y	CHIP R
B2		QRSA08J-0R0Y	CHIP R
B3		QRSA08J-0R0Y	CHIP R
B4		QRSA08J-0R0Y	CHIP R
B5		QRSA08J-0R0Y	CHIP R
B6		QRSA08J-0R0Y	CHIP R
B7		QRSA08J-0R0Y	CHIP R
B8		QRSA08J-0R0Y	CHIP R
B9		QRSA08J-0R0Y	CHIP R
RA1		NRB042J-102N	CHIP RESISTOR ARRAY
RA2		NRB042J-102N	CHIP RESISTOR ARRAY
RA3		NRB042J-102N	CHIP RESISTOR ARRAY
RA4		NRB042J-102N	CHIP RESISTOR ARRAY
C1		QCFA1EZ-104	CHIP CAP
C2		QEF80JM-225	CHIP T CAP
C3		QCFA1EZ-104	CHIP CAP
C4		—	—
C5		—	—
C6		QER40GM-227	E CAP
C7		QEK40JM-337	E CAP
C8		QEK40JM-337	E CAP

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
	R251	QRSA08J-102YN	CHIP R
	R252	QRSA08J-394YN	CHIP R
	R253	QRSA08J-153YN	CHIP R
	R254	QRSA08J-101YN	CHIP R
	R255	QRSA08J-473YN	CHIP R
	R256	QRSA08K-2R2YN	CHIP R
	R257	QRSA08K-2R2YN	CHIP R
	R258	QRSA08K-2R2YN	CHIP R
⚠	R259	QRG125J-R68A	OMR
	R260	—	—
	R261	—	—
	R262	QRSA08J-332YN	CHIP R
	R263	—	—
	R264	QRSA08J-471YN	CHIP R
	C251	QFZ9011-104	MP CAP
	C252	QCSA1HJ-181	CHIP CAP
	C253	QER41CM-106	E CAP
	C254	QCYA1HK-103	CHIP CAP
	C255	QER41CM-106	E CAP
	C256	QER41CM-106	E CAP
	C257	QER41CM-106	E CAP
	C258	QCFA1EZ-104	CHIP CAP
	C259	QCFA1EZ-104	CHIP CAP
	C260	—	—
	C261	QER41CM-106	E CAP
	C262	QER41CM-106	E CAP
	C263	QCFA1EZ-104	CHIP CAP
	C264	QFZ0095-104	MP CAP
	C265	QCFA1EZ-104	CHIP CAP
	L251	PU59188-101K	CHIP COIL
⚠	CP251	ICP-F10	CIRCUIT PROTECTOR
		PQ42514	COVER PLATE
	SLD1	PU58981	SHIELD COVER
	CN-M1	PU58655-13	CAP. HOUSING
.....			
		PU22428A-02-C	SKEW JUMP BOARD ASS'Y [12]
	IC1	AN3592S	FLAT IC
	IC2	MSM6989MS	FLAT IC
	IC3	TA7374P	INTEGRATED CIRCUIT
	IC4	AN8009	INTEGRATED CIRCUIT

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
Q1		2SC2412K	CHIP TRANSISTOR	R31		QRSA08J-122YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR	R32		QRSA08J-102YN	CHIP R
Q2		2SC2412K	CHIP TRANSISTOR	R33		QRSA08J-152YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR	R34		PU59237-103	CHIP VR, DELAYED V LEV
Q3		2SC2412K	CHIP TRANSISTOR		OR	PU59456-103	CHIP VR
	OR	2SD601	CHIP TRANSISTOR	R35		QRSA08J-393YN	CHIP R
Q4		2SC2412K	CHIP TRANSISTOR	R36		QRSA08J-473YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR	R37		QRSA08J-222YN	CHIP R
Q5		2SC2412K	CHIP TRANSISTOR	R38		QRSA08J-103YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR	R39		QRSA08J-223YN	CHIP R
Q6		2SC2412K	CHIP TRANSISTOR	R40		QRSA08J-103YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR				
Q7		2SA1037K	CHIP TRANSISTOR	R41		QRSA08J-122YN	CHIP R
	OR	2SB709	CHIP TRANSISTOR	R42		QRSA08J-681YN	CHIP R
Q8		2SC2412K	CHIP TRANSISTOR	R43		QRSA08J-681YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR	R44		QRSA08J-391YN	CHIP R
Q9		2SC2412K	CHIP TRANSISTOR	R45		QRSA08J-562YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR	R46		QRSA08J-473YN	CHIP R
Q10		2SC2412K	CHIP TRANSISTOR	R47		QRSA08J-473YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR	R48		QRSA08J-333YN	CHIP R
				R49		QRSA08J-333YN	CHIP R
Q11		2SC2412K	CHIP TRANSISTOR	R50		QRSA08J-122YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR				
Q12		2SC2412K	CHIP TRANSISTOR	R51		QRSA08J-471YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR	R52		QRSA08J-152YN	CHIP R
Q13		2SC2412K	CHIP TRANSISTOR	R53		QRSA08J-333YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR	R54		QRSA08J-333YN	CHIP R
Q14		2SC2412K	CHIP TRANSISTOR	R55		QRSA08J-122YN	CHIP R
	OR	2SD601	CHIP TRANSISTOR	R56		QRSA08J-272YN	CHIP R
				R57		QRSA08J-222YN	CHIP R
R1		QRSA08J-332YN	CHIP R	C1		QCYA1HK-332	CHIP CAP
R2		QRSA08J-391YN	CHIP R	C2		QCYA1HK-152	CHIP CAP
R3		QRSA08J-123YN	CHIP R	C3		QEF81AM-475	CHIP T CAP
R4		QRSA08J-104YN	CHIP R	C4		QEF81AM-105	CHIP T CAP
R5		QRSA08J-102YN	CHIP R	C5		QEF81AM-105	CHIP T CAP
R6		QRSA08J-473YN	CHIP R	C6		QCYA1HK-102	CHIP CAP
R7		QRSA08J-821YN	CHIP R	C7		QCSA1HJ-220	CHIP CAP
R8		QRSA08J-272YN	CHIP R	C8		QCYA1HK-103	CHIP CAP
R9		QRSA08J-222YN	CHIP R	C9		QCSA1HJ-220	CHIP CAP
				C10		QCYA1HK-103	CHIP CAP
R11		QRSA08J-223YN	CHIP R	C11		QCYA1HK-103	CHIP CAP
R12		QRSA08J-103YN	CHIP R	C12		QCYA1HK-103	CHIP CAP
R13		QRSA08J-154YN	CHIP R	C13		QCYA1EK-223	CHIP CAP
R14		QRSA08J-221YN	CHIP R	C14		QEF80JM-476	CHIP T CAP
R15		QRSA08J-393YN	CHIP R	C15		QCYA1HK-222	CHIP CAP
R16		PU59237-473	CHIP VR, 0.5 H DET	C16		QCYA1HK-103	CHIP CAP
	OR	PU59456-473	CHIP VR	C17		QCYA1HK-222	CHIP CAP
R17		QRSA08J-222YN	CHIP R	C18		QEF81AM-105	CHIP T CAP
R18		QRSA08J-561YN	CHIP R	C19		QCYA1EK-223	CHIP CAP
R19		QRSA08J-561YN	CHIP R	C20		QCYA1HK-103	CHIP CAP
R20		QRSA08J-393YN	CHIP R				
				C21		QCSA1HJ-151	CHIP CAP
R21		QRSA08J-223YN	CHIP R	C22		QEK41AM-107	E CAP
R22		QRSA08J-471YN	CHIP R	C23		QCYA1EK-223	CHIP CAP
R23		QRSA08J-222YN	CHIP R	C24		QCSA1HJ-220	CHIP CAP
R24		QRSA08J-681YN	CHIP R	C25		QER40JM-476	E CAP
R25		QRSA08J-681YN	CHIP R	C26		QCSA1HJ-270	CHIP CAP
R26		QRSA08J-471YN	CHIP R	C27		QCSA1HJ-330	CHIP CAP
R27		QRSA08J-561YN	CHIP R	C28		ECEV1CV100	CHIP E CAP
R28		QRSA08J-681YN	CHIP R	C29		QEK41AM-107	E CAP
R29		QRSA08J-153YN	CHIP R	C30		QCYA1HK-103	CHIP CAP
R30		QRSA08J-223YN	CHIP R				

#	REF.NO.	PART NO.	PART NAME, DESCRIPTION
C31	QCYA1HK-103	CHIP CAP	
C32	QER40JM-476	E CAP	
C33	QCYA1EK-223	CHIP CAP	PU22483A-1-C
C34	QCYA1HK-103	CHIP CAP	END ALARM BOARD ASS'Y [13]
C35	QCYA1HK-103	CHIP CAP	IC1 UPD4040BG FLAT IC
C36	QEF81VM-104	CHIP T CAP	IC2 UPD4069UBG FLAT IC
C37	QEF81AM-475	CHIP T CAP	IC3 UPD4013BG FLAT IC
C38	QCYA1HK-103	CHIP CAP	IC4 UPD4068BG FLAT IC
C39	QCSA1HJ-390	CHIP CAP	IC5 UPD4027BG FLAT IC
C40	QCYA1HK-102	CHIP CAP	IC6 UPD4011BG FLAT IC
			IC7 8A222 INTEGRATED CIRCUIT
C41	ECEV1EV4R7	CHIP E CAP	
C42	QCYA1HK-103	CHIP CAP	
C43	QCSA1HJ-100	CHIP CAP	
C44	QCYA1HK-103	CHIP CAP	Q1 DTC144EK CHIP DIGITAL TRANSISTOR
C45	QEF80JM-476	CHIP T CAP	Q2 2SA1037K CHIP TRANSISTOR
C46	QEF81AM-105	CHIP T CAP	Q3 DTC144EK CHIP DIGITAL TRANSISTOR
C47	QCYA1EK-223	CHIP CAP	
C48	QCYA1EK-223	CHIP CAP	
C49	QEF81AM-105	CHIP T CAP	
C50	QCYA1HK-103	CHIP CAP	D1 MA151WA CHIP DIODE
C51	QEF81VM-224	CHIP T CAP	
C52	ECEV1CV100	CHIP E CAP	
C53	QCF11HP-103	C CAP	R1 QRSA08J-333YN CHIP R
			R2 QRSA08J-124YN CHIP R
			R3 QRSA08J-333YN CHIP R
L1	PU59482	LC BLOCK	R4 QRSA08J-103YN CHIP R
			R5 QRSA08J-103YN CHIP R
			R6 QRSA08J-473YN CHIP R
L3	PU59483	LC BLOCK	R7 QRSA08J-223YN CHIP R
L4	PU58627-100J	CHIP COIL	R8 QRSA08J-223YN CHIP R
OR	PU58201-100J	CHIP COIL	R9 QRSA08J-564YN CHIP R
L5	PU58627-101K	CHIP COIL	R10 QRSA08J-473YN CHIP R
OR	PU58201-101K	CHIP COIL	
L6	PU58627-101K	CHIP COIL	
OR	PU58201-101K	CHIP COIL	
L7	PU58627-390J	CHIP COIL	C1 QEF81AM-105 CHIP T CAP
OR	PU58201-390J	CHIP COIL	C2 QER41CM-106 E CAP
L8	PU58627-560J	CHIP COIL	C3 QER41CM-106 E CAP
OR	PU58201-560J	CHIP COIL	C4 QCYA1HK-102 CHIP CAP
L9	PU58627-101K	CHIP COIL	C5 QCFA1EZ-104 CHIP CAP
OR	PU58201-101K	CHIP COIL	C6 QCFA1EZ-104 CHIP CAP
L10	PU58627-101K	CHIP COIL	C7 QCFA1EZ-104 CHIP CAP
OR	PU58201-101K	CHIP COIL	
L11	PU58627-101K	CHIP COIL	
OR	PU58201-101K	CHIP COIL	SH1 PU59810 SHEET
TP	PU56278	TEST PIN, TP1 - 11	SPC1 PQM30029-86 SPACER
			</

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
		PU11394E9	IMAGER BOARD ASS'Y [21], [22]
		[IMAGER (1) SECTION]	
IC1	—		REFER TO [M5]
IC2	MC-5573A		INTEGRATED CIRCUIT
IC3	MMH0026CP1		INTEGRATED CIRCUIT
Q1	2SD601R		CHIP TRANSISTOR
Q2	2SD601R		CHIP TRANSISTOR
Q3	2SA1462-T2BY33		CHIP TRANSISTOR
Q4	2SC3735-T1B833		CHIP TRANSISTOR
	OR 2SC3735-T1B834		CHIP TRANSISTOR
Q5	2SC2778C		CHIP TRANSISTOR
Q6	2SC2778C		CHIP TRANSISTOR
Q7	2SC2778C		CHIP TRANSISTOR
D1	MA153		CHIP DIODE
D2	MA151K		CHIP DIODE
D3	MA151K		CHIP DIODE
R1	QRSA08J-912YN		CHIP R
R2	QRSA08J-104YN		CHIP R
R3	QRSA08J-472YN		CHIP R
R4	QRSA08J-332YN		CHIP R
R5	PU57457-104		VR
R6	QRSA08J-104YN		CHIP R
R7	QRSA08J-224YN		CHIP R
R8	QRSA08J-332YN		CHIP R
R9	QRSA08J-101YN		CHIP R
R10	QRSA08J-220YN		CHIP R
R11	QRSA08J-124YN		CHIP R
R12	QRSA08J-303YN		CHIP R
R13	QRSA08J-222YN		CHIP R
R14	QRSA08J-220YN		CHIP R
R15	QRSA08J-393YN		CHIP R
R16	QRSA08J-153YN		CHIP R
R17	QRSA08J-272YN		CHIP R
R18	QRSA08J-102YN		CHIP R
R19	QRSA08J-102YN		CHIP R
R20	QRSA08J-123YN		CHIP R
R21	QRSA08J-333YN		CHIP R
R22	QRSA08J-102YN		CHIP R
R23	QRSA08J-333YN		CHIP R
R24	QRSA08J-183YN		CHIP R
R25	QRSA08J-102YN		CHIP R
R26	QRSA08J-681YN		CHIP R
R27	QRSA08J-220YN		CHIP R
R28	QRSA08J-220YN		CHIP R
R47	QRSA08J-104YN		CHIP R
R48	QRSA08J-101YN		CHIP R

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
C1		QCYA1HK-103	CHIP CAP
C2		QER41EM-475A	E CAP
C3		QCYA1HK-103	CHIP CAP
C4		QEK41CM-107	E CAP
C5		QCYA1HK-103	CHIP CAP
C6		ECEV1CV100	CHIP E CAP
C7		QCYA1HK-103	CHIP CAP
C8		QER41CM-106A	E CAP
C9		QCFA1EZ-104	CHIP CAP
C10		QCYA1HK-103	CHIP CAP
C11		QCYA1HK-103	CHIP CAP
C12		QCYA1HK-103	CHIP CAP
C13		QER41CM-226	E CAP
C14		QCYA1HK-103	CHIP CAP
C15		PU58980-105	CHIP CAP
C16		PU58980-105	CHIP CAP
C17		QCTA1CH-680	CHIP CAP
C18		QCTA1CH-680	CHIP CAP
C19		QEE81AM-476	T CAP
C20		QCTA1CH-101	CHIP CAP
C21		QCTA1CH-101	CHIP CAP
C22		QEF81CM-105	CHIP T CAP
C23		QCYA1HK-103	CHIP CAP
C24		QER40JM-476	E CAP
C25		QCYA1HK-103	CHIP CAP
C26		QEMA1AM-107	E CAP
	OR	QED40JM-127	E CAP
C27		QCYA1HK-103	CHIP CAP
C28		QCYA1HK-103	CHIP CAP
C29		ECEV1CV100	CHIP E CAP
C30		QCYA1HK-103	CHIP CAP
C31		QER41EM-475A	E CAP
C32		QCYA1HK-103	CHIP CAP
C33		QER41CM-106A	E CAP
C34		QCYA1HK-103	CHIP CAP
C35		QCYA1HK-103	CHIP CAP
C36		QER41CM-106A	E CAP
C37		QCYA1HK-103	CHIP CAP
C38		QCYA1HK-103	CHIP CAP
C60		QCYA1HK-103	CHIP CAP
C66		QCYA1HK-103	CHIP CAP
C67		QCYA1HK-103	CHIP CAP
C68		QCYA1HK-103	CHIP CAP
C69		QCYA1HK-103	CHIP CAP
C70		PU58980-105	CHIP CAP
C71		PU58980-105	CHIP CAP
C72		PU58980-105	CHIP CAP
C78		QCYA1HK-103	CHIP CAP
C79		—	—
C80		QCT25CH-390	C CAP
L1		PU59022-1	CHIP COIL, 100 μH
L2		PU58385-270K	CHIP COIL

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
L3		PU58385-100K	CHIP COIL	C39		QCYA1HK-103	CHIP CAP
L4		PU58385-270K	CHIP COIL	C40		QER41CM-106A	E CAP
L5		PU58385-100K	CHIP COIL	C41		QCYA1HK-103	CHIP CAP
FC1		PU58946-1	FLAT CABLE	C42		QER40JM-476	E CAP
FC2		PU58946-2	FLAT CABLE	C43		QER40JM-476	E CAP
				C44		QCYA1HK-103	CHIP CAP
				C45		QCYA1HK-103	CHIP CAP
				C46		QER41CM-226	E CAP
				C47		QCYA1HK-103	CHIP CAP
				C48		ECEV1CV100	CHIP E CAP
				C49		—	—
				C50		—	—
				C51		—	—
				C52		QCYA1HK-103	CHIP CAP
				C53		QCTA1CH-220	CHIP CAP
				C54		QCYA1HK-103	CHIP CAP
				C55		QCYA1HK-103	CHIP CAP
				C56		QCTA1CH-470	CHIP CAP
				C57		QCTA1CH-470	CHIP CAP
				C58		—	—
				C59		—	—
				C61		QCYA1HK-103	CHIP CAP
				C62		QER41CM-106A	E CAP
				C63		QCYA1HK-103	CHIP CAP
				C64		QCYA1HK-103	CHIP CAP
				C65		QCYA1HK-103	CHIP CAP
				C73		QCYA1HK-103	CHIP CAP
				C74		QCYA1HK-103	CHIP CAP
				C75		QCYA1HK-103	CHIP CAP
				C76		QCYA1HK-103	CHIP CAP
				L6		PU59022-3	CHIP COIL, 22μH
				L7		PU59022-1	CHIP COIL, 100 μH
				L8		PU58385-100K	CHIP COIL
				L9		PU58385-270K	CHIP COIL
				X1		PU59439	OSCILLATOR
				FW1		PU59131	FLEX. WIRE
				CN-13		PU59100-12	CAP. HOUSING
				SPC1		PQ31341	BOARD SPACER, X 2
				R29		QRSA08J-102YN	CHIP R
				R30		QRSA08J-393YN	CHIP R
				R31		QRSA08J-103YN	CHIP R
				R32		QRSA08J-563YN	CHIP R
				R33		QRSA08J-104YN	CHIP R
				R34		QRSA08J-104YN	CHIP R
				R35		QRSA08J-104YN	CHIP R
				R36		QRSA08J-104YN	CHIP R
				R37		—	—
				R38		—	—
				R39		QRSA08J-271YN	CHIP R
				R40		QRSA08J-271YN	CHIP R
				R41		QVZ3531-331	VR, V. SUB
				R42		—	—
				R43		QRSA08J-0R0Y	CHIP R
				R44		QRSA08J-124YN	CHIP R
				R45		QRSA08J-183YN	CHIP R
				R46		QRSA08J-0R0Y	CHIP R
				R49		QRD161J-271	CR
				R50		QRD161J-271	CR

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
.....			
		PU22247F-01-C	VIDEO BOARD ASS'Y [23]
IC1		UPD9310G	FLAT IC
IC2		UPD74HC74G	FLAT IC
	OR	MN74HCU74S	FLAT IC
	OR	LR74HC74N2	FLAT IC
IC3		M51277FP	FLAT IC
IC4		—	—
IC5		H8D7001	INTEGRATED CIRCUIT
IC6		HA11881MP	FLAT IC
IC7		26VT06	INTEGRATED CIRCUIT
Q1		2SC2778C	CHIP TRANSISTOR
Q2		2SC2778C	CHIP TRANSISTOR
Q3		2SC2778C	CHIP TRANSISTOR
Q4		2SC2778C	CHIP TRANSISTOR
Q5		2SC2778C	CHIP TRANSISTOR
Q6		2SC2778C	CHIP TRANSISTOR
Q7		2SA1022C	CHIP TRANSISTOR
	OR	2SA812	CHIP TRANSISTOR
	OR	2SA1037K	CHIP TRANSISTOR
Q8		2SA1022C	CHIP TRANSISTOR
	OR	2SA812	CHIP TRANSISTOR
	OR	2SA1037K	CHIP TRANSISTOR
Q9		2SA1022C	CHIP TRANSISTOR
	OR	2SA812	CHIP TRANSISTOR
	OR	2SA1037K	CHIP TRANSISTOR
Q10		2SA1022C	CHIP TRANSISTOR
	OR	2SA812	CHIP TRANSISTOR
	OR	2SA1037K	CHIP TRANSISTOR
Q11		2SC2778C	CHIP TRANSISTOR
	OR	2SC1623	CHIP TRANSISTOR
Q12		2SC2778C	CHIP TRANSISTOR
	OR	2SC1623	CHIP TRANSISTOR
Q13		2SC2778C	CHIP TRANSISTOR
	OR	2SC1623	CHIP TRANSISTOR
Q14		2SA1022C	CHIP TRANSISTOR
	OR	2SA812	CHIP TRANSISTOR
Q15		2SC2778C	CHIP TRANSISTOR
	OR	2SC1623	CHIP TRANSISTOR
Q16		2SC2778C	CHIP TRANSISTOR
	OR	2SC1623	CHIP TRANSISTOR
Q17		2SC2778C	CHIP TRANSISTOR
	OR	2SC1623	CHIP TRANSISTOR
Q18		2SC2778C	CHIP TRANSISTOR
	OR	2SC1623	CHIP TRANSISTOR
Q19		2SC2778C	CHIP TRANSISTOR
	OR	2SC1623	CHIP TRANSISTOR
Q20		2SC2778C	CHIP TRANSISTOR
	OR	2SC1623	CHIP TRANSISTOR
Q21		2SC2778C	CHIP TRANSISTOR
	OR	2SC1623	CHIP TRANSISTOR
Q22		2SC2778C	CHIP TRANSISTOR
	OR	2SC1623	CHIP TRANSISTOR
Q23		—	—
Q24		FMW2	CHIP PAIR TRANSISTOR
Q25		2SC2778C	CHIP TRANSISTOR

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
D1		—	—
D2		1SS99	DIODE
D3		MA151A	CHIP DIODE
D4		MA151A	CHIP DIODE
R1		QRSA08J-332YN	CHIP R
R2		QRSA08J-332YN	CHIP R
R3		QRSA08J-152YN	CHIP R
R4		QRSA08J-152YN	CHIP R
R5		QRSA08J-104YN	CHIP R
R6		QRSA08J-682YN	CHIP R
R7		QRSA08J-222YN	CHIP R
R8		QRSA08J-333YN	CHIP R
R9		QRSA08J-223YN	CHIP R
R10		QRSA08J-102YN	CHIP R
R11		QRSA08J-102YN	CHIP R
R12		PU59237-102	CHIP VR, DET CLOCK PHASE
	OR	PU59456-102	CHIP VR
R13		QRSA08J-332YN	CHIP R
R14		QRSA08J-103YN	CHIP R
R15		QRSA08J-333YN	CHIP R
R16		QRSA08J-103YN	CHIP R
R17		—	—
R18		QRSA08J-102YN	CHIP R
R19		QRSA08J-102YN	CHIP R
R20		QRSA08J-102YN	CHIP R
R21		QRSA08J-561YN	CHIP R
R22		QRSA08J-182YN	CHIP R
R23		QRSA08J-222YN	CHIP R
R24		QRSA08J-102YN	CHIP R
R25		PU59237-102	CHIP VR, YL GAIN
	OR	PU57816-2-102	CHIP VR
	OR	PU59456-102	CHIP VR
R26		QRSA08J-222YN	CHIP R
R27		QRSA08J-272YN	CHIP R
R28		QRSA08J-102YN	CHIP R
R29		QRSA08J-102YN	CHIP R
R30		QRSA08J-222YN	CHIP R
R31		PU59237-103	CHIP VR, R/B BALANCE
	OR	PU57816-2-103	CHIP VR
	OR	QVZ3606-103	CHIP VR
	OR	PU59456-103	CHIP VR
R32		QRSA08J-332YN	CHIP R
R33		QRSA08J-122YN	CHIP R
R34		QRSA08J-103YN	CHIP R
R35		QRSA08J-103YN	CHIP R
R36		QRSA08J-102YN	CHIP R
R37		QRSA08J-102YN	CHIP R
R38		PU59237-103	CHIP VR, B CARR BAL
	OR	PU59456-103	CHIP VR
R39		PU59237-103	CHIP VR, R CARR BAL
	OR	PU59456-103	CHIP VR
R40		PU59237-102	CHIP VR, COL DIFF BAL
	OR	PU57816-2-102	CHIP VR
	OR	PU59456-102	CHIP VR
R41		QRSA08J-222YN	CHIP R
R42		PU59237-472	CHIP VR, NOISE SUP
	OR	PU57816-2-472	CHIP VR
	OR	PU59456-472	CHIP VR

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
R43		QRSA08J-332YN		CHIP R	R91		QRSA08J-562YN		CHIP R
R44		QRSA08J-273YN		CHIP R	R92		—	—	—
R45		QRSA08J-223YN		CHIP R	R93		—	—	—
R46		QRSA08J-272YN		CHIP R	R94		—	—	—
R47		QRSA08J-332YN		CHIP R	R95		—	—	—
R48		QRSA08J-222YN		CHIP R	R96		—	—	—
R49		QRSA08J-472YN		CHIP R	R97		—	—	—
R50		PU59237-222		CHIP VR, YH GAIN	R98		—	—	—
	OR	PU59456-222		CHIP VR	R99		—	—	—
R51		QRSA08J-222YN		CHIP R	R100		QRSA08J-0R0Y		CHIP R
R52		QRSA08J-273YN		CHIP R	R101		—	—	—
R53		QRSA08J-223YN		CHIP R	R102		—	—	—
R54		—		—	R103		—	—	—
R55		QRSA08J-392YN		CHIP R	R104		—	—	—
R56		QRSA08J-152YN		CHIP R	R105		—	—	—
R57		PU59237-222		CHIP VR, B-Y GAIN	R106		—	—	—
	OR	PU59456-222		CHIP VR	R107		—	—	—
R58		QRSA08J-102YN		CHIP R	R108		—	—	—
R59		QRSA08J-272YN		CHIP R	R109		—	—	—
R60		PU59237-222		CHIP VR, R SET UP	R110		—	—	—
	OR	PU57816-2-222		CHIP VR	R111		—	—	—
	OR	PU59456-222		CHIP VR	R112		—	—	—
R61		QRSA08J-152YN		CHIP R	R113		—	—	—
R62		PU59237-222		CHIP VR, B SET UP	R114		—	—	—
	OR	PU57816-2-222		CHIP VR	R115		—	—	—
	OR	PU59456-222		CHIP VR	R116		—	—	—
R63		PU59237-222		CHIP VR, YL SET UP	R117		—	—	—
	OR	PU57816-2-222		CHIP VR	R118		—	—	—
	OR	PU59456-222		CHIP VR	R119		—	—	—
R64		PU59237-222		CHIP VR, YH SET UP	R120		QRSA08J-223YN		CHIP R
	OR	PU57816-2-222		CHIP VR	R121		QRSA08J-103YN		CHIP R
	OR	PU59456-222		CHIP VR	R122		PU59237-473		CHIP VR, AGC
R65		PU59237-222		CHIP VR, V EDGE BALANCE		OR	PU59456-473		CHIP VR
	OR	PU57816-2-222		CHIP VR	R123		QRSA08J-103YN		CHIP R
	OR	PU59456-222		CHIP VR	R124		—	—	—
R66		QRSA08J-272YN		CHIP R	R125		—	—	—
R67		QRSA08J-272YN		CHIP R	R126		—	—	—
R68		QRSA08J-332YN		CHIP R	R127		—	—	—
R69		QRSA08J-103YN		CHIP R	R128		QRSA08J-473YN		CHIP R
R70		QRSA08J-223YN		CHIP R	R129		QRSA08J-822YN		CHIP R
R71		QRSA08J-821YN		CHIP R	R130		PU59237-472		CHIP VR, R LIMITER
R72		QRSA08J-222YN		CHIP R	R131		QRSA08J-103YN		CHIP R
R73		QRSA08J-132YN		CHIP R	R132		QRSA08J-152YN		CHIP R
R74		QRSA08J-331YN		CHIP R	R133		QRSA08J-224YN		CHIP R
R75		QRSA08J-391YN		CHIP R	R134		QRSA08J-103YN		CHIP R
R76		QRSA08J-911YN		CHIP R	R135		QRSA08J-103YN		CHIP R
R77		QRSA08J-103YN		CHIP R	R136		QRSA08J-272YN		CHIP R
R78		QRSA08J-391YN		CHIP R	R137		QRSA08J-152YN		CHIP R
R79		QRSA08J-331YN		CHIP R	R138		QRSA08J-332YN		CHIP R
R80		QRSA08J-561YN		CHIP R					
R81		—		—	R142		QRSA08J-0R0Y		CHIP R
R82		QRSA08J-393YN		CHIP R	R143		QRSA08J-103YN		CHIP R
R83		QRSA08J-103YN		CHIP R	R144		QRSA08J-102YN		CHIP R
R84		—		—	R145		QRSA08J-154YN		CHIP R
R85		—		—	R146		PU59237-103		CHIP VR, B L.S CARRY BAL
R86		—		—	R147		QRSA08J-103YN		CHIP R
R87		—		—	R148		PU59237-103		CHIP VR, R L.S CARRY BAL
R88		—		—	R149		QRSA08J-103YN		CHIP R
R89		—		—	R150		QRSA08J-103YN		CHIP R
R90		QRSA08J-562YN		CHIP R	R151		QRSA08J-822YN		CHIP R

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
R152	QRSA08J-102YN	CHIP R		C52	ECEV0JV220	CHIP E CAP	
R153	QRD161J-102	CR		C53	ECEV0JV220	CHIP E CAP	
R154	QRD161J-332	CR		C54	QCY81EK-473	CHIP CAP	
R155	QRD161J-394	CR		C55	QCFA1EZ-104	CHIP CAP	
R156	—	—		C56	QCY81EK-473	CHIP CAP	
R157	QRD161J-224	CR		C57	ECEV0JV220	CHIP E CAP	
C1	QCFA1EZ-104	CHIP CAP		C58	ECEV0JV220	CHIP E CAP	
C2	—	—		C59	QCFA1EZ-104	CHIP CAP	
C3	QCSA1HJ-390	CHIP CAP		C60	QCYA1HK-103	CHIP CAP	
C4	QCSA1HJ-390	CHIP CAP		C61	QCSA1HJ-470	CHIP CAP	
C5	QCYA1HK-103	CHIP CAP		C62	ECEV0GV330	CHIP E CAP	
C6	QCYA1HK-102	CHIP CAP		C63	QCSA1HJ-330	CHIP CAP	
C7	QCYA1HK-103	CHIP CAP		C64	QCSA1HJ-330	CHIP CAP	
C8	QCSA1HJ-150	CHIP CAP		C65	QCSA1HJ-330	CHIP CAP	
C9	QCYA1HK-103	CHIP CAP		C66	QCSA1HJ-330	CHIP CAP	
C10	QCSA1HJ-220	CHIP CAP		C67	QCSA1HJ-330	CHIP CAP	
C11	QCYA1HK-103	CHIP CAP		C68	QER40JM-226	E CAP	
C12	QCYA1HK-103	CHIP CAP		C69	QCYA1HK-103	CHIP CAP	
C13	QCYA1HK-103	CHIP CAP		C70	QCYA1HK-103	CHIP CAP	
C14	ECEV1CV100	CHIP E CAP		C71	QRSA08J-0R0Y	CHIP R	
C15	QER40JM-226	E CAP		C72	QCTA1CH-390	CHIP CAP	
C16	QER40GM-336	E CAP		C73	ECEV0JV220	CHIP E CAP	
C17	QER40JM-106A	E CAP		C74	—	—	
C18	QER41EM-225A	E CAP		C75	QCSA1HK-220	CHIP CAP	
C19	QER40JM-226	E CAP					
C20	QER40JM-226*	E CAP		C100	QCF11HP-103	C CAP	
C21	QCYA1HK-103	CHIP CAP		C120	QEE41CM-226	T CAP	
C22	—	—		C121	—	—	
C23	QCTA1CH-330	CHIP CAP		C122	QCYA1EK-223	CHIP CAP	
C24	ECEV1CV100	CHIP E CAP		C123	ECEV0JV101	CHIP E CAP	
C25	ECEV1CV100	CHIP E CAP		C124	ECEV1CV100	CHIP E CAP	
C26	ECEV1HVR47	CHIP E CAP		C125	QCTA1CH-330	CHIP CAP	
C27	ECEV1CV100	CHIP E CAP		C126	QEE41CM-106	T CAP	
C28	ECEV1CV100	CHIP E CAP		C127	QCYA1HK-103	CHIP CAP	
C29	ECEV0JN100	CHIP NP CAP					
C30	QCFA1EZ-104	CHIP CAP					
C31	ECEV1CV100	CHIP E CAP		L1	PU58627-120K	CHIP COIL	
C32	QCFA1EZ-104	CHIP CAP		OR	PU58201-120K	CHIP COIL	
C33	PU58980-105	CHIP CAP		L2	PU58627-120K	CHIP COIL	
C34	ECEV0GV330	CHIP E CAP		OR	PU58201-120K	CHIP COIL	
C35	QCYA1HK-103	CHIP CAP		L3	PU58627-120K	CHIP COIL	
C36	PU58980-105	CHIP CAP		OR	PU58201-120K	CHIP COIL	
C37	PU58980-105	CHIP CAP		L4	PU59022-3	CHIP COIL, 22 μ H	
C38	QEF80GM-475	CHIP T CAP		L5	PU58385-4R7K	CHIP COIL	
C39	QEF80GM-475	CHIP T CAP		L6	PU58627-120K	CHIP COIL	
C40	ECEV0JV220	CHIP E CAP		OR	PU58201-120K	CHIP COIL	
C41	ECEV0JV220	CHIP E CAP		L7	PU58627-120K	CHIP COIL	
C42	—	—		OR	PU58201-120K	CHIP COIL	
C43	QCYA1HK-103	CHIP CAP		L8	PU59115	FERRITE BEADS	
C44	QER40JM-226	E CAP		L9	PU59115	FERRITE BEADS	
C45	QCYA1HK-103	CHIP CAP		L10	PU59115	FERRITE BEADS	
C46	QCYA1HK-103	CHIP CAP					
C47	QCYA1HK-103	CHIP CAP		L11	PU59115	FERRITE BEADS	
C48	QCYA1HK-103	CHIP CAP		L12	PU59115	FERRITE BEADS	
C49	QCYA1HK-103	CHIP CAP					
C50	QCFA1EZ-104	CHIP CAP					
C51	QCY81EK-473	CHIP CAP		X101	PU59432	VCXO	

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
		Q1	2SC2412KT-97R	CHIP TRANSISTOR
			OR 2SD601R	CHIP TRANSISTOR
		Q2	—	—
		Q3	2SK198	CHIP FET
		Q4	2SC2778B,C	CHIP TRANSISTOR
			OR 2SC1623	CHIP TRANSISTOR
		Q5	DTC144WK	CHIP DIGITAL TRANSISTOR
		Q6	2SK621	CHIP DIGITAL FET
		Q7	2SC2778B,C	CHIP TRANSISTOR
			OR 2SC2413KT-96P,Q	CHIP TRANSISTOR
		Q8	2SC2413KT-97P,Q	CHIP TRANSISTOR
			OR 2SC1623	CHIP TRANSISTOR
		Q9	2SC2412KT-97R	CHIP TRANSISTOR
			OR 2SC1623	CHIP TRANSISTOR
		Q10	2SC2778B,C	CHIP TRANSISTOR
			OR 2SC2412KT-97R	CHIP TRANSISTOR
		Q11	2SK198P,Q	CHIP FET
		Q12	2SA1037KT-96R	CHIP TRANSISTOR
			OR 2SB709Q,R	CHIP TRANSISTOR
		Q13	2SC2778B,C	CHIP TRANSISTOR
			OR 2SC2412KT-96R	CHIP TRANSISTOR
		D1	MA151WA	CHIP DIODE
		D2	—	—
		D3	MA151A	CHIP DIODE
			OR MA151WA	CHIP DIODE
			OR DAP202K	CHIP DIODE
		D4	MA151WA	CHIP DIODE
			OR DAP202K	CHIP DIODE
		D5	MA151WA	CHIP DIODE
			OR DAP202K	CHIP DIODE
		D6	—	—
		D7	RD8.2ESB2	ZENER DIODE
		D8	RD8.2ESB2	ZENER DIODE
		D9	RD8.2ESB2	ZENER DIODE
		D10	DAN202K	DIODE
		D11	MA151K	CHIP DIODE
		D12	MA151K	CHIP DIODE
		D13	DAN202K	CHIP DIODE
		D14	1S133	DIODE
		D15	MA151K	CHIP DIODE
		D16	MA151K	CHIP DIODE

PU22248E-1-C		EE & IND BOARD ASS'Y [24]
IC1	MN1239JVQ	FLAT IC
IC2	HA11776AMP	FLAT IC
IC3	UPC324G2	FLAT IC
OR	IR3702N2	FLAT IC
IC4	BA6208F	FLAT IC
IC5	MN74HCU04S	FLAT IC
OR	UPD74HC04G2	FLAT IC
OR	LR74HC04N2	FLAT IC
△ IC6	AN8005	INTEGRATED CIRCUIT

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
R16			QRSA08J-223YN	CHIP R	R75			QRSA08J-100YN	CHIP R
R17			QRSA08J-222YN	CHIP R	R76			QRSA08J-272YN	CHIP R
R18			QRSA08J-100YN	CHIP R	R77			QRSA08J-223YN	CHIP R
R19			QRSA08J-103YN	CHIP R	R78			QRSA08J-223YN	CHIP R
R20			QRSA08J-682YN	CHIP R	R79			QRSA08J-102YN	CHIP R
					R80			QRSA08J-562YN	CHIP R
R21			QRSA08J-103YN	CHIP R	R81			QRSA08J-333YN	CHIP R
R22			QRSA08J-102YN	CHIP R	R82			QRSA08J-183YN	CHIP R
R23			QRSA08J-222YN	CHIP R	R83			QRSA08J-103YN	CHIP R
R24			QRSA08J-561YN	CHIP R	R84			QRSA08J-272YN	CHIP R
R25			QRSA08J-563YN	CHIP R	R85			QRSA08J-103YN	CHIP R
R26			QRSA08J-103YN	CHIP R	R86			QRSA08J-684YN	CHIP R
R27			QRSA08J-393YN	CHIP R	R87			QRSA08J-102YN	CHIP R
R28			QRSA08J-222YN	CHIP R	R88			QRSA08J-102YN	CHIP R
R29			QRSA08J-122YN	CHIP R	R89			QRSA08J-103YN	CHIP R
R30			QRSA08J-103YN	CHIP R	R90			QRSA08J-183YN	CHIP R
R31			QRSA08J-473YN	CHIP R	R91			QRSA08J-103YN	CHIP R
R32			QRSA08J-822YN	CHIP R	R92			QRSA08J-362YN	CHIP R
R33			QRSA08J-333YN	CHIP R	R93			QRSA08J-153YN	CHIP R
R34			QRSA08J-223YN	CHIP R	R94			QRSA08J-103YN	CHIP R
R35			QRSA08J-222YN	CHIP R	R95			QRD161J-223	CR
R36			QRSA08J-150YN	CHIP R	R96			—	—
R37			QRSA08J-122YN	CHIP R	R97			QRSA08J-333YN	CHIP R
R38			—	—	R98			QRSA08J-333YN	CHIP R
R39			QVZ3606-102	CHIP VR, CHROMA GAIN	R99			QRSA08J-102YN	CHIP R
R40			QRSA08J-122YN	CHIP R	R100			—	—
R41			QRSA08J-153YN	CHIP R	R101			QRSA08J-0R0Y	CHIP R
R42			QRSA08J-223YN	CHIP R	R102			QRSA08J-105YN	CHIP R
R43			QRSA08J-123YN	CHIP R	R103			QRSA08J-104YN	CHIP R
R44			QRSA08J-123YN	CHIP R	R104			QRSA08J-223YN	CHIP R
R45			QRSA08J-471YN	CHIP R	R105			QRSA08J-123YN	CHIP R
R46			QVZ3606-103	CHIP VR, BURST PHASE					
R47			QRSA08J-104YN	CHIP R	C1			—	—
R48			QRSA08J-104YN	CHIP R	C2			QER41AM-476	E CAP
R49			QVZ3606-102	CHIP VR, S.C PHASE	C3			—	—
R50			QVZ3606-472	CHIP VR, BURST GAIN	C4			—	—
R51			QRSA08J-103YN	CHIP R	C5			—	—
R52			QRSA08J-103YN	CHIP R	C6			QER41CM-106A	E CAP
R53			QRSA08J-104YN	CHIP R	C7			QER40JM-226	E CAP
R54			QRSA08J-103YN	CHIP R	C8			QCYA1HK-103	CHIP CAP
R55			QRSA08J-103YN	CHIP R	C9			—	—
R56			QRD161J-101	CR	C10			—	—
R57			QRSA08J-152YN	CHIP R	C11			PU58980-105	CHIP CAP
R58			QRSA08J-103YN	CHIP R	C12			QCYA1HK-103	CHIP CAP
R59			QRSA08J-182YN	CHIP R	C13			QER41CM-106A	E CAP
R60			QRSA08J-222YN	CHIP R	C14			QCYA1HK-103	CHIP CAP
R61			QVZ3606-102	CHIP VR, IRIS	C15			—	—
R62			QRSA08J-272YN	CHIP R	C16			QER41CM-106A	E CAP
R63			QRSA08J-104YN	CHIP R	C17			QCYA1HK-103	CHIP CAP
R64			QRSA08J-103YN	CHIP R	C18			QCYA1HK-103	CHIP CAP
R65			QRSA08J-103YN	CHIP R	C19			QCYA1HK-103	CHIP CAP
R66			—	—	C20			QEE81AM-476	T CAP
R67			—	—	C21			QCYA1HK-103	CHIP CAP
R68			QRSA08J-822YN	CHIP R	C22			—	—
R69			QRSA08J-103YN	CHIP R	C23			QCFA1EZ-104	CHIP CAP
R70			QRSA08J-183YN	CHIP R	C24			QER41CM-106A	E CAP
R71			QRSA08J-223YN	CHIP R	C25			QER40JM-476	E CAP
R72			QRSA08J-223YN	CHIP R	C26			QCYA1HK-103	CHIP CAP
R73			QRSA08J-223YN	CHIP R	C27			QCYA1HK-103	CHIP CAP
R74			QRSA08J-0R0Y	CHIP R					

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
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		C28	QCFA1EZ-104	CHIP CAP
		C29	QCSA1HJ-391	CHIP CAP
		C30	QER40GM-336	E CAP

		C31	QCYA1HK-103	CHIP CAP
		C32	QCTA1CH-560	CHIP CAP
		C33	QCYA1HK-103	CHIP CAP
		C34	QCYA1HK-103	CHIP CAP
		C35	QCFA1EZ-104	CHIP CAP
		C36	QCYA1HK-103	CHIP CAP
		C37	QCYA1HK-103	CHIP CAP
		C38	QCFA1EZ-104	CHIP CAP
		C39	QCYA1HK-102	CHIP CAP
		C40	QCYA1HK-103	CHIP CAP

		C41	QCFA1EZ-104	CHIP CAP
		C42	QCFA1EZ-104	CHIP CAP
		C43	QCYA1HK-103	CHIP CAP
		C44	QCSA1HJ-180	CHIP CAP
		C45	QCFA1EZ-104	CHIP CAP
		C46	QCFA1EZ-104	CHIP CAP
		C47	QER40JM-226	E CAP
		C48	QER40GM-336	E CAP
		C49	—	—
		C50	—	—

		C51	QCY81EK-473	CHIP CAP
		C52	—	—
		C53	QER41CM-106A	E CAP
		C54	QER41CM-106A	E CAP
		C55	QCSA1HJ-221	CHIP CAP

		C61	QCFA1EZ-104	CHIP CAP
		C62	QCFA1EZ-104	CHIP CAP
		C63	QCFA1EZ-104	CHIP CAP
		C64	QCFA1EZ-104	CHIP CAP

		L1	—	—
		L2	—	—
		L3	—	—
		L4	PU59022-1	CHIP COIL, 100 µH
		L5	PU58627-220K	CHIP COIL
			OR PU58201-220K	CHIP COIL
		L6	PU58201-220K	CHIP COIL
			OR PU58627-220K	CHIP COIL

		BPF1	PU59438	CHIP BAND PASS FILTER
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		SLD1	PQ42548	PLATE
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		TP	PU59111-2	TEST PIN, TP1-5
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		CN-E1	—	—
		CN-E2	PU58250-4	CAP. HOUSING

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
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		CN-E3	PU58250-10	CAP. HOUSING
		CN-E4	PU58250-10	CAP. HOUSING
		CN-E5	PU58654-7	CAP. HOUSING
		CN-E6	PU58654-6	CAP. HOUSING

		CN-E7	—	—
		CN-E8	—	—
		CN-E9	—	—
		CN-E10	PU58654-4	CAP. HOUSING

		CN-E11	PU58654-2	CAP. HOUSING
		CN-E12	PU58654-3	CAP. HOUSING
		CN-E13	PU58654-3	CAP. HOUSING
		CN-E14	PU58252-8	CAP. HOUSING
		CN-E15	PU58654-2	CAP. HOUSING

			PU36017E-02-C	CONTROL BOARD ASS'Y [26]
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		IC701	IR3P50M	FLAT IC
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		Q701	2SD601Q	CHIP TRANSISTOR
		Q702	2SD601Q	CHIP TRANSISTOR

		D701	MA704	CHIP ZENER DIODE
		D702	MA704	CHIP ZENER DIODE
		D703	RD8.2ESB2	ZENER DIODE
		D704	RD8.2ESB2	ZENER DIODE

		PD1	PD152V	PHOTO DIODE
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		R701	—	—
		R702	—	—
		R703	ERT-D2FIK-154S	THERMISTOR
		R704	QRSA08J-392YN	CHIP R
		R705	QVZ3606-223	CHIP VR, COLOR SENSOR
		R706	QRSA08J-822YN	CHIP R
		R707	QRSA08J-472YN	CHIP R
		R708	QRSA08J-473YN	CHIP R
		R709	QRSA08J-123YN	CHIP R
		R710	QRSA08J-683YN	CHIP R


		R711	—	—
		R712	QRSA08J-104YN	CHIP R
		R713	QRSA08J-822YN	CHIP R
		R714	QRSA08J-333YN	CHIP R
		R715	QRSA08J-333YN	CHIP R

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
R716	QRSA08J-103YN	CHIP R		C711	QCFA1HZ-152	CHIP CAP	
R717	QRSA08J-0R0Y	CHIP R		C712	QER41CM-106A	E CAP	
R718	QVZ3606-222	CHIP VR, R GAIN (INDOOR)		C713	QER40GM-476	E CAP	
R719	QRSA08J-0R0Y	CHIP R		C714	QCFA1HZ-103	CHIP CAP	
R720	QRSA08J-223YN	CHIP R		C715	QER41CM-226	E CAP	
				C716	QER41CM-106A	E CAP	
R721	QVZ3606-473	CHIP VR, R GAIN (OUTDOOR)		C717	QCFA1HZ-103	CHIP CAP	
R722	QRSA08J-273YN	CHIP R		C718	QER41AM-336	E CAP	
R723	QRSA08J-123YN	CHIP R		C719	QER41AM-476	E CAP	
R724	QRSA08J-564YN	CHIP R					
R725	QRSA08J-203YN	CHIP R					
R726	QRSA08J-103YN	CHIP R					
R727	—	—		L701	PU58385-4R7K	CHIP COIL	
R728	QRSA08J-183YN	CHIP R					
R729	QRSA08J-223YN	CHIP R					
R730	QVZ3606-473	CHIP VR, B GAIN (OUTDOOR)					
R731	QRSA08J-223YN	CHIP R		S701	PU57008	TACT SWITCH, FADER	
R732	QRSA08J-0R0Y	CHIP R		S702	PU57008	TACT SWITCH, BLC	
R733	QVZ3606-222	CHIP VR, B GAIN (INDOOR)		S703	PU57008	TACT SWITCH, FULL AUTO SET	
R734	QRSA08J-0R0Y	CHIP R		S704	PU57008	TACT SWITCH, PRESET	
R735	QRSA08J-393YN	CHIP R		S705	PU57008	TACT SWITCH, FOCUS AUTO/MANUAL	
R736	QRSA08J-0R0Y	CHIP R					
R737	QRSA08J-433YN	CHIP R					
R738	QRSA08J-822YN	CHIP R		TP	PU58465	TEST PIN, TP701	
R739	QRSA08J-333YN	CHIP R					
R740	QRSA08J-123YN	CHIP R					
R741	QRSA08J-513YN	CHIP R					
R742	QRSA08J-113YN	CHIP R		CN-C1	PU58654-15	CAP. HOUSING	
R743	QRSA08J-562YN	CHIP R		CN-C2	—	—	
R744	QRSA08J-564YN	CHIP R		CN-C3	PU58654-3	CAP. HOUSING	
R745	QRSA08J-102YN	CHIP R					
R746	QRSA08J-223YN	CHIP R					
R747	QRSA08J-223YN	CHIP R					
R748	QRSA08J-122YN	CHIP R		SLD1	PQ42547-1-1	W/B SHIELD CASE	
R749	QRSA08J-222YN	CHIP R		SLD2	PU59059	CASE	
R750	QRSA08J-152YN	CHIP R		SLD3	PQ42617-1-1	W/B SHIELD PLATE	
				SLD4	PQ42548-3	PLATE	
R751	QRSA08J-101YN	CHIP R			PQ42493	IR CUT FILTER	
R752	QRSA08J-122YN	CHIP R		HD1	PQ42421	FILTER HOLDER	
R753	QVZ3606-223	CHIP VR, OUTDOOR PRESET					
R754	QVZ3606-472	CHIP VR, INDOOR PRESET					
B701	QRSA08J-0R0Y	CHIP R					
B702	QRSA08J-0R0Y	CHIP R					
B703	—	—					
B704	QRSA08J-0R0Y	CHIP R					
B705	QRSA08J-0R0Y	CHIP R					
B706	—	—					
B707	QRSA08J-0R0Y	CHIP R					
C701	QER41CM-226	E CAP			PU11394B3	TRIGGER BOARD ASS'Y [27]	
C702	QCFA1HZ-103	CHIP CAP		SW1	PU59007	PUSH SWITCH, TRIGGER	
C703	QCFA1EZ-104	CHIP CAP					
C704	QCYA1HK-103	CHIP CAP					
C705	QEE41AM-685	T CAP					
C706	QCFA1EZ-104	CHIP CAP					
C707	QCYA1HK-682	CHIP CAP					
C708	QER41AM-336	E CAP					
C709	PU58980-105	CHIP CAP					
C710	QCFA1HZ-152	CHIP CAP					



 REF. NO. PART NO. PART NAME, DESCRIPTION

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PU36016E-C REGULATOR BOARD ASS'Y [28]

IC1 M5236ML FLAT IC
 IC2 AN79L08 INTEGRATED CIRCUIT

Q1 2SB793R TRANSISTOR



R1 QRSA08J-221YN CHIP R
 R2 QRSA08J-822YN CHIP R
 R3 — —
 R4 — —
 R5 — —
 R6 QVZ3531-222 VR, 8 V ADJ
 R7 QRSA08J-123YN CHIP R
 R8 PU52108-101 POSISTOR

C1 QED41EM-396 E CAP
 C2 QCYA1HK-103 CHIP CAP
 C3 QCYA1HK-103 CHIP CAP
 C4 QED41EM-396 E CAP
 C5 QED41EM-396 E CAP
 C6 QCYA1HK-103 CHIP CAP
 C7 QCYA1HK-103 CHIP CAP
 C8 QED41EM-396 E CAP
 C9 QED41AM-826 E CAP
 C10 QCYA1HK-103 CHIP CAP

C11 QCYA1HK-103 CHIP CAP
 C12 QED41AM-826 E CAP
 C13 QED41CM-566 E CAP
 C14 QCYA1HK-103 CHIP CAP
 C15 QCYA1HK-103 CHIP CAP
 C16 QED41AM-826 E CAP
 C17 QED41CM-566 E CAP
 C18 QCFA1EZ-104 CHIP CAP
 C19 QCY81EK-473 CHIP CAP
 C20 QED41AM-826 E CAP

C21 QCYA1HK-103 CHIP CAP
 C22 QED40JM-127 E CAP
 C23 QCYA1HK-103 CHIP CAP

L1 PU59025 B.F.C.C. COIL, 100 μ H
 L2 PU59025 B.F.C.C. COIL, 100 μ H
 L3 PU59025 B.F.C.C. COIL, 100 μ H
 L4 — —
 L5 PU58385-4R7K CHIP COIL

 DD CON1 PU59116-2 DC-DC CONVERTER
 OR PU59221 DC-DC CONVERTER

 REF. NO. PART NO. PART NAME, DESCRIPTION

TP PU59111-2 TEST PIN, TP1

CN-R1 PU58654-6 CAP. HOUSING
 CN-R2 PU58655-6 CAP. HOUSING
 CN-R3 PU58250-8 CAP. HOUSING

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PU59192C-C PAL SUB BOARD ASS'Y [29]

Q1024 FMS2 CHIP PAIR TRANSISTOR

R1128 QRSA08J-473YN CHIP R
 R1129 QRSA08J-102YN CHIP R
 R1130 PU57457-682 VR, YELLOW SUP

R1131 QRSA08J-123YN CHIP R
 R1132 QRD161J-221 CR

C1127 QCYA1HK-103 CHIP CAP




CN-P1 PU58655-6 CAP. HOUSING
 PQ42533 BOARD PLATE

SCR1 SDSP2003Z SCREW

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 REF.NO. PART NO. PART NAME, DESCRIPTION

C56 PU59090-51 FM CAP, 1500 P/400

 CN2 PU59090-52 CRT SOCKET TF PU59090-42 THERMAL FUSE FBT PU59090-27 FLYBACK TRANS SET, INCL.
RX1, RX2, C55RX1 QRD161J-0R0 CR
OR QRD161J-3R3 CR

OR QRD161J-7R2 CR

RX2 QRD161J-0R0 CR
OR QRD161J-684 CRC55 PU59090-47 PP CAP, 680 P/100
OR PU59090-48 PP CAP, 1000 P/100
OR PU59090-49 PP CAP, 1500 P/100
OR PU59090-50 PP CAP, 2000 P/100

HLC PU59090-28 HLC SET, INCL. RX1, RX2, C55

RX1 QRD161J-0R0 CR
OR QRD161J-3R3 CR

OR QRD161J-7R2 CR

RX2 QRD161J-0R0 CR
OR QRD161J-684 CRC55 PU59090-47 PP CAP, 680 P/100
OR PU59090-48 PP CAP, 1000 P/100
OR PU59090-49 PP CAP, 1500 P/100
OR PU59090-50 PP CAP, 2000 P/100PU59090-25 DEFLECTION YOKE, INCL. RX1,
RX2, C55RX1 QRD161J-0R0 CR
OR QRD161J-3R3 CR

OR QRD161J-7R2 CR

RX2 QRD161J-0R0 CR
QRD161J-684 CRC55 PU59090-47 PP CAP, 680 P/100
OR PU59090-48 PP CAP, 1000 P/100
OR PU59090-49 PP CAP, 1500 P/100
OR PU59090-50 PP CAP, 2000 P/100#  REF.NO. PART NO. PART NAME, DESCRIPTION

PU59090-26 CRT, INCL. RX1, RX2, C55

RX1 QRD161J-0R0 CR

OR QRD161J-3R3 CR

OR QRD161J-7R2 CR

RX2 QRD161J-0R0 CR

QRD161J-684 CR

C55 PU59090-47 PP CAP, 680 P/100

OR PU59090-48 PP CAP, 1000 P/100

OR PU59090-49 PP CAP, 1500 P/100

OR PU59090-50 PP CAP, 2000 P/100

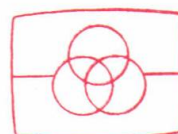
NOTE: RX1, RX2 AND C55 ARE INCLUDED IN FLYBACK TRANS SET, HLC SET, DEFLECTION YOKE AND CRT. WHEN THESE SETS ARE CHANGED: IF H SCAN SIZE MALFUNCTIONS BY INFLUENCE OF OTHER SETS, CHANGING THESE PARTS (RX1, RX2 OR C55), MAKE A NORMAL.

JVC

SERVICE MANUAL

CAR BATTERY CHARGER

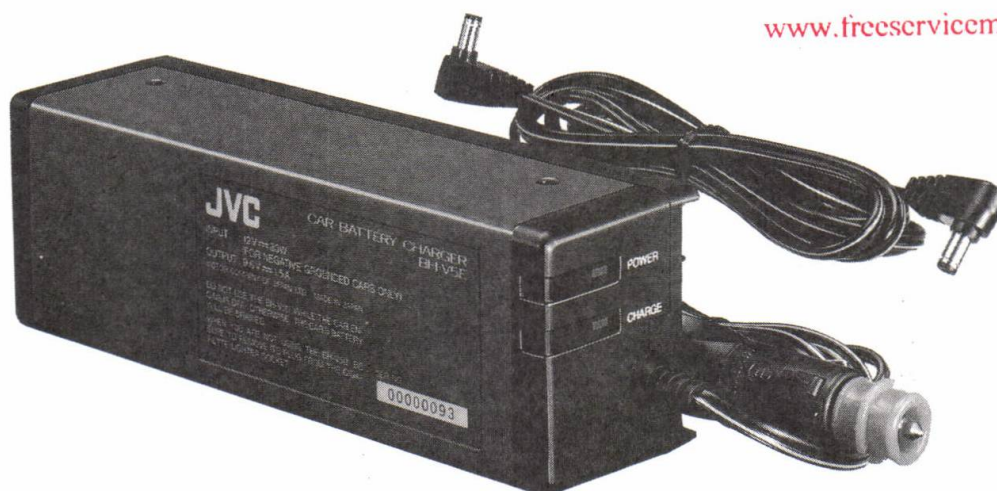
BH-V5E



Free service manuals

Gratis schema's

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SPECIFICATIONS

Input	: DC 12 V \equiv 30 W (Negative grounded cars only)
Output	: DC 9.6 V \equiv , 1,5 A
Dimensions	: 57(W) x 69(H) x 195(D) mm (2-1/4" x 2-3/4" x 7-11/16")
Weight	: 540 g (1.19 lbs)

INSTRUCTIONS

MANUEL D'INSTRUCTIONS
BEDIENUNGSANLEITUNG
MANUAL DE INSTRUCCIONES
GEBRUIKSAANWIJZING

BH-V5E**CAR BATTERY CHARGER**

CHARGEUR DE BATTERIE A
PARTIR DE LA VOITURE
AUTOBATTERIE-LADEGERÄT
CARGADOR DE BATERIA DEL
AUTOMOVIL
AUTOAKKU-OPLADER

Specifically for the BH-V5E
Special pour le BH-V5E
Für Modellausführung BH-V5E
Especialmente para la BH-V5E
Speciaal voor de BH-V5E

PU30425-858

JVC

Thank you for purchasing the JVC BH-V5E Car Battery Charger. This unit plugs into a car's cigarette lighter socket to charge NB-P5U, NB-P6U, NB-P7U and NB-P8U Battery Packs, for exclusive use with the JVC VideoMovie. It can also be used to provide DC power for the JVC GR-C1/GR-C2/GR-C7 VideoMovie. To avoid problems and obtain the best results, please read this instruction booklet carefully before use.

CAUTION

To prevent electric shock, do not open the cabinet. No user serviceable parts inside. Refer servicing to qualified service personnel.

WARNING—DANGEROUS VOLTAGE INSIDE**WARNING:**

**TO PREVENT FIRE OR SHOCK HAZARD,
DO NOT EXPOSE THIS UNIT TO RAIN OR
MOISTURE.**

This unit should be used with DC 12 V --- only.
(FOR NEGATIVE GROUNDED CARS ONLY)

CAUTION:

To prevent electric shocks and fire hazards, do NOT use any other power source.

NOTE:

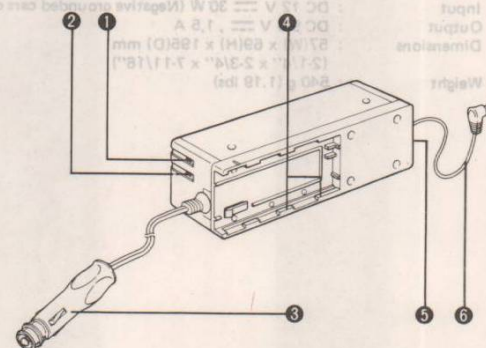
The rating plate (serial number plate) is on the side of the unit.

PRECAUTIONS

- As a car battery adapter/charger, the BH-V5E is used exclusively with the JVC GR-C1/GR-C2/GR-C7 VideoMovie.
- Prevent inflammables, water and metallic objects from entering the unit.
- Do not disassemble or modify the unit.
- Do not apply shocks to the unit.
- Do not subject the unit to direct sunlight.
- Avoid using the unit in extremely hot or humid places.
- Avoid using the unit in places subject to excessive vibrations.
- When not in use, remove the plug of the BH-V5E from the lighter socket.
- Do not use the BH-V5E near the car's antenna or car audio components. It may cause sound interference.
- Remove the charger's plug from the lighter socket before starting the car's engine and when the engine is turned off.
- The BH-V5E becomes hot while it is being used, but this is not due to any defect of this unit.
- Oscillations may be heard inside the BH-V5E while it is being used, but this is not due to any defect of this unit.
- When using such car accessories as the stereo, CB radio or air-conditioner, the BH-V5E may not operate because the car battery's voltage is too low. To solve this problem, remove the plug from the lighter socket, stop using the car accessories, and re-insert the plug.

Note:

If the cigarette lighter socket is dirty, it may not provide power and must be cleaned. To prevent shock, clean it with non-metallic materials.

IDENTIFICATION**1 POWER indicator**

Lights when the cigarette lighter plug is inserted into a car's lighter socket.

2 CHARGE indicator

Remains lighted during charging and goes off when charging is completed.

3 Cigarette lighter plug**4 Terminals****5 DC output connector****6 DC cord****Charging time**

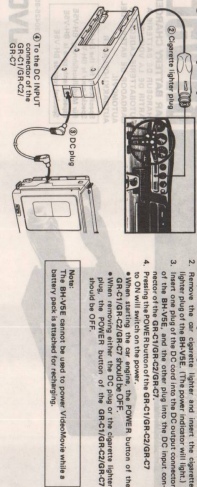
NB-P5U: Approx. 60 minutes (This special type of battery requires a long charging time.)

NB-P6U: Approx. 35 minutes

NB-P7U: Approx. 50 minutes

NB-P8U: Approx. 90 minutes

• The charging time differs depending on the ambient temperature and condition of the battery pack.



CHARGING THE BATTERY PACK

1. Remove the car cigarette lighter from the car and connect it to the DC input of the NB-PSU.
2. Connect the positive terminal of the battery pack to the positive terminal of the cigarette lighter.
3. Connect the negative terminal of the battery pack to the negative terminal of the cigarette lighter.
4. Turn on the car cigarette lighter.

CAUTION: The battery pack becomes warm immediately after being charged. This is not due to any defect of the unit.

A WORD ON THE EXCLUSIVE BATTERY PACKS

The NB-PSU/NB-PSU/PSU are made with the use of the following materials:

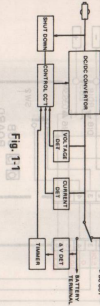
- 1. The anode material is made of copper.
- 2. The cathode material is made of nickel.
- 3. The electrolyte is made of nickel.
- 4. The separator is made of polyethylene.
- 5. The container is made of polyethylene.
- 6. The terminal is made of copper.
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- 100. The terminal is made of copper.

SPECIFICATIONS

Input: DC 12 V ± 20 V (negative ground only)
Output: 5.7 V ± 0.01 V (1.5 A)
Dimensions: 50 x 20 x 10 mm
Weight: 50 g ± 0.5 g

1. DESCRIPTION OF CAR BATTERY CHARGER

The BH-VE Car Battery Charger accepts power from a 12 V car battery and can be used to charge the NB-PSU/BU/BU Battery Packs and operate the VideoMovie, etc. Power from the car's cigarette lighter socket is converted to 8.6 V by a forward-style DC/DC converter and is supplied to the connected load.



The required input voltage is input to the control circuit together with the output current and type of battery to be charged. This circuit controls the DC/DC converter according to this data.

1. Shut-down circuit

When the input voltage falls below a fixed value (10 V), this interrupts the operation of the charger so as to protect the car battery.

2. Voltage detection circuit

This regulates the output so it does not exceed 18 V during charging and 12 V during VTR operation, even if a malfunction occurs.

3. Current detection circuit

This operates the protective circuit at 1.1 A when charging the NB-PSU at 1.5 A when charging the BU-PSU/BU/BU and at 2 A at peak when operating a VTR. This circuit gives protection against overloads.

4. ΔV detection and timer circuits

These circuits detect ΔV when charging a battery. When ΔV becomes wrong during operation, the circuit stops forcibly 120 minutes after the start of charging.

2. DISMANTLING PROCEDURE

2.1 EXTERNAL COVER AND CIRCUIT BOARD REMOVAL

1. Remove 4 screws (1) to remove the top cover. (Refer to Fig. 2-1.)

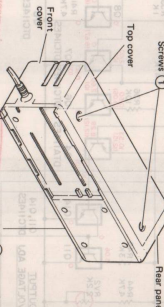
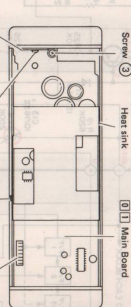


Fig. 2-1

2. To remove the front and rear panels, lift up while grasping heat sink after the top cover has been removed. Remove screw (2) shown in Fig. 2-2 to remove the LED board.

3. Remove screws (3) and (4). Now lift the heat sink to remove connector (5). The main board can now be removed.



4. After the main Board is removed, remove screws (5) and the shield case as shown in Fig. 2-3. Now the sub-board can be removed.

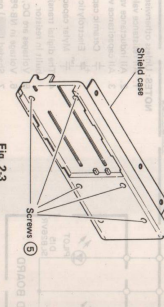


Fig. 2-3

3. ELECTRICAL ADJUSTMENTS

No.	Item	Check Point	Adjustment Parts	Mode/Conditions	Adjustment & Confirmations
-----	------	-------------	------------------	-----------------	----------------------------

1. Adjustment of output voltage
Battery terminal
Main board
NB-PSU mode
NB-PSU mode
NB-PSU mode

- 1) Operate the charger with an input voltage of 10.5 V.
- 2) Adjust the load so that the battery terminal voltage is 10 - 12 V. Turn RV1 so that the current is 1.5 A.
- 3) After adjusting the load for the specified voltage, confirm that the charging current is 1.1 ± 0.1 A.

2. Adjustment of output voltage
DC cord (within 10 cm of the DC jack)
Main board
VTR mode
VTR mode
VTR mode

- 1) Operate the charger with an input voltage of 10.5 V.
- 2) Insert the DC cord into a DC jack to connect a load of 10.4 ± 0.1 ohms.
- 3) Install a voltmeter within 10 cm from the jack. Adjust RV2 to set to voltage to 10.4 V.
- 4) When the resistance is between 5.2 and 10.4 ohms, confirm that the output voltage exceeds 9.7 V.

3. Adjustment of shut-down voltage
anode of D20 and GND
Main board
VTR mode
VTR mode
VTR mode

- 1) Ground the cathode of D20 on the main board.
- 2) Turn RV3 fully counterclockwise.
- 3) Connect an oscilloscope between the anode of D20 and GND.
- 4) Set a load resistance which allows 2A to flow to the DC jack. (Approx. 5.2 ohms)
- 5) Set the input voltage to 9.95 V.
- 6) Turn RV3 clockwise to adjust the oscilloscope waveform to 100 mV.
- 7) Operate the charger at 12 V and connect C41 to the DC jack as a load.
- 8) Gradually decrease the input voltage just before shut-down is 8.95 ± 0.1 V.

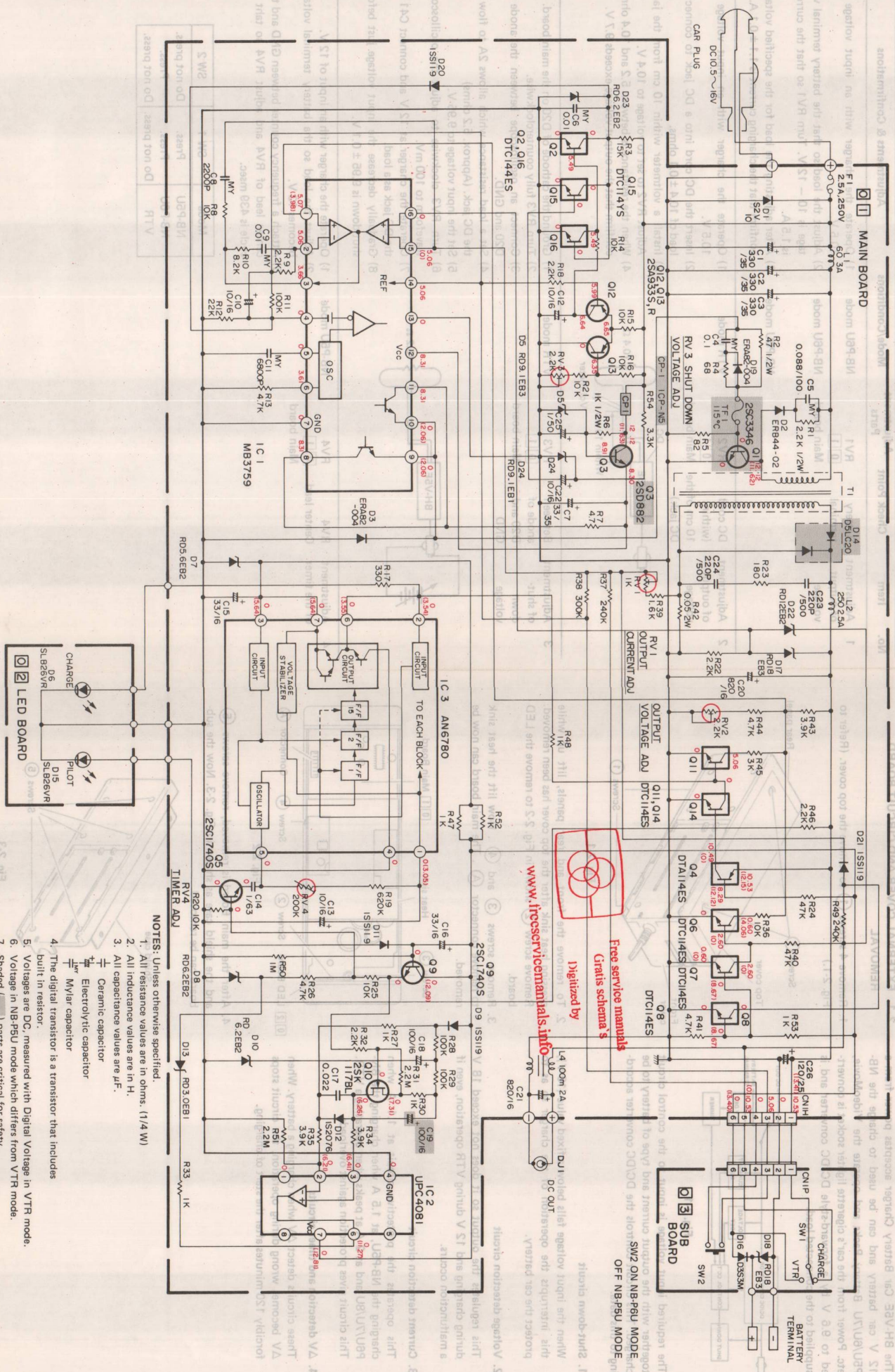
4. Adjustment of the timer
RV4
Main board
NB-PSU mode
NB-PSU mode
NB-PSU mode

- 1) Operate the charger with an input of 12 V.
- 2) Adjust the load to the battery terminal voltage becomes 13 V.
- 3) Attach a frequency counter between GND and the center lead of RV4 and adjust RV4 so that the cycle is 439 msec.

Mode	SW 1	SW 2
NB-PSU	Press.	Do not press.
NB-PSU	Press.	Press.
VTR	Do not press.	Do not press.

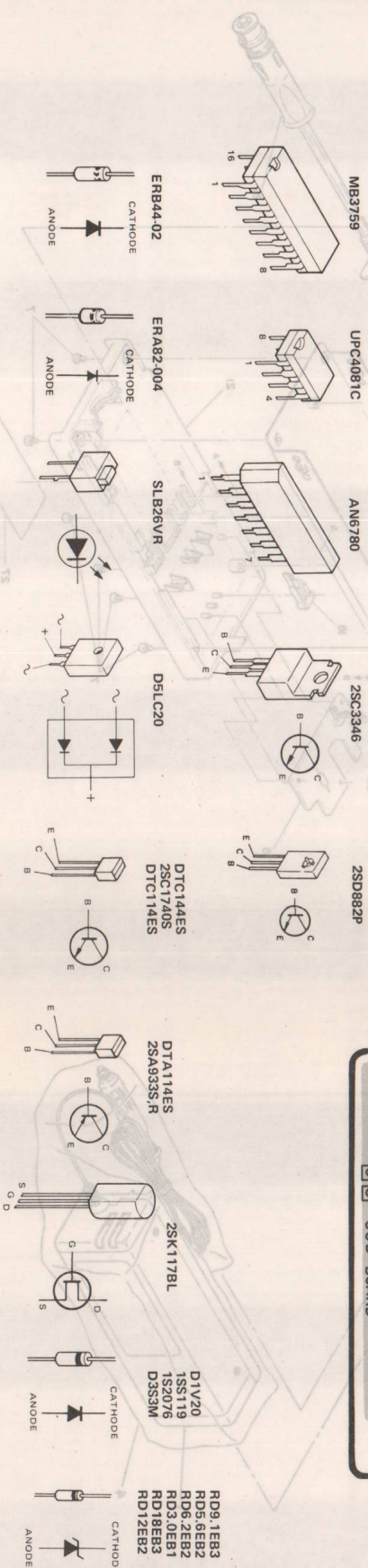
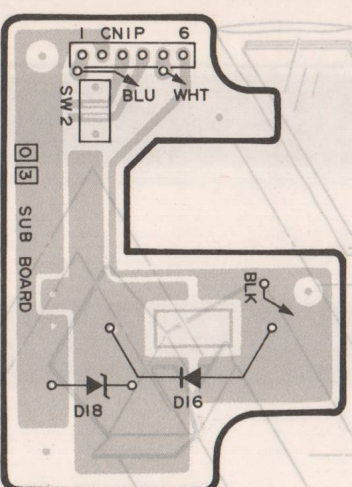
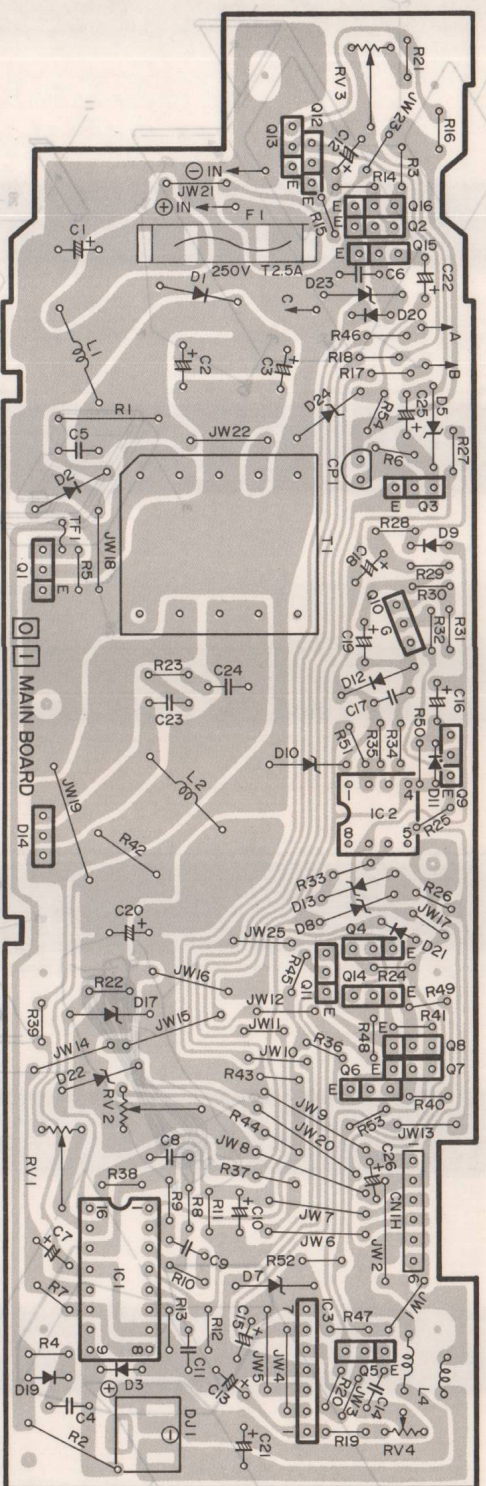
4. SCHEMATIC AND CIRCUIT BOARD DIAGRAM

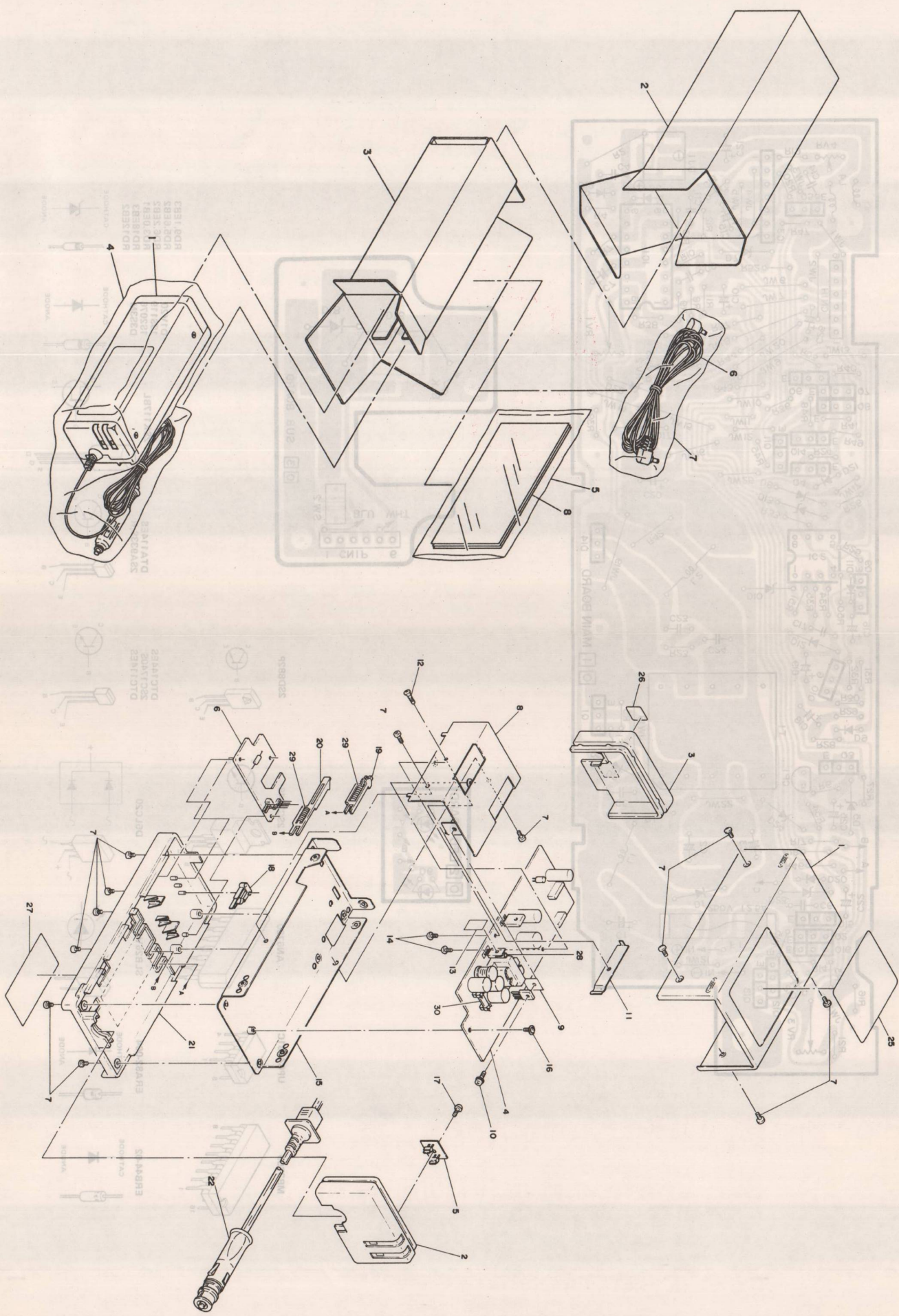
4.1 SCHEMATIC DIAGRAM



NOTES: Unless otherwise specified.

1. All resistance values are in ohms. (1/4 W)
2. All inductance values are in H.
3. All capacitance values are μF .
4. The digital transistor is a transistor that includes built in resistor.
5. Voltages are DC, measured with Digital Voltage in VTR mode.
6. Voltage in NB-PSU mode which differs from VTR mode.
7. Shaded () parts are critical for safety.





6. PARTS LIST

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
PACKING ASSEMBLY [M1]					PQ10325-037 MAIN BOARD ASSEMBLY [01]				
△	1	—	—	CAR BATTERY CHARGER ASSEMBLY	IC1		MB3759	—	INTEGRATED CIRCUIT
	2	PU22249-3	—	PACKING CASE	IC2		UPC4081C	—	INTEGRATED CIRCUIT
	3	PQ10325-007	—	PACKING	IC3		AN6780	—	INTEGRATED CIRCUIT
	4	PQ10325-008	—	POLY BAG (A), FOR BH-V5E	△	Q1	2SC3346	—	TRANSISTOR
	5	PQ10325-009	—	POLY BAG (B), FOR INSTRUCTION BOOK	Q2		DTC144ES	—	DIGITAL TRANSISTOR
	6	PQ10325-027	—	DC CORD ASS'Y	△	Q3	2SD882P	—	TRANSISTOR
	7	PQ10325-011	—	POLY BAG (C) FOR DC CORD	Q4		DTA114ES	—	DIGITAL TRANSISTOR
△	8	PU30425-858	—	INSTRUCTION BOOK	Q5		2SC1740S	—	TRANSISTOR
CAR BATTERY CHARGER ASSEMBLY [M2]					Q6		DTC114ES	—	DIGITAL TRANSISTOR
△	1	PU35879-3	—	TOP COVER	Q7		DTC114ES	—	DIGITAL TRANSISTOR
△	2	PU36023-2	—	FRONT COVER	Q8		DTC114ES	—	DIGITAL TRANSISTOR
△	3	PQ10243-101	—	REAR PANEL	Q9		2SC1740S	—	TRANSISTOR
	4	—	—	MAIN BOARD ASSEMBLY	Q10		2SK117BL	—	F.E.T
	5	—	—	L.E.D BOARD ASSEMBLY	Q11		DTC114ES	—	DIGITAL TRANSISTOR
	6	—	—	SUB BOARD ASSEMBLY	Q12		2SA933S,R	—	TRANSISTOR
	7	PU11061-006	—	SCREW, X2 M3X4	Q13		2SA933S,R	—	TRANSISTOR
	8	PQ10325-012	—	HEAT SINK	Q14		DTC114ES	—	DIGITAL TRANSISTOR
	9	PQ10325-013	—	SHEET (A), FOR Q3	Q15		DTC144YS	—	DIGITAL TRANSISTOR
	10	DPSP3006M	—	SCREW, M3X6	Q16		DTC144ES	—	DIGITAL TRANSISTOR
	11	PQ10325-014	—	HOLDER, FOR Q1, D14	D1		D1V20	—	DIODE
	12	SSSP3012M	—	SCREW, M3X12	D2		ERB44-02	—	DIODE
	13	PQ10325-015	—	SHEET (B), FOR Q1	D3		ERA82-004	—	DIODE
	14	S BSP2608M	—	TAPPING SCREW, M2.6X8	D4		—	—	—
	15	PQ10325-016	—	SHIELD CASE	D5		RD9.1EB3	—	ZENER DIODE, VZ=9.1V
	16	DPSP3006M	—	SCREW, M3X6	D6		—	—	—
	17	SBSG2606M	—	TAPPING SCREW, M2.6X8	D7		RD5.6EB2	—	ZENER DIODE, VZ=5.6V
	18	PQ10325-017	—	SWITCH, SW1	D8		RD6.2EB2	—	ZENER DIODE, VZ=6.2V
	19	PQ10325-018	—	SWITCH PIN (A), FOR SW2	D9		1SS119	—	DIODE
	20	PQ10325-019	—	SWITCH PIN (B), FOR SW1	D10		RD6.2EB2	—	ZENER DIODE, VZ=6.2V
	21	PQ10325-020	—	BATTERY HOLDER ASSEMBLY	D11		1SS119	—	DIODE
	22	PQ10325-036	—	CAR PLUG CORD	D12		1S2076	—	DIODE
	23	—	—	—	D13		RD3.0EB1	—	ZENER DIODE, VZ=3.0V
	24	—	—	—	D14		D5LC20	—	DIODE
	25	—	—	RATING LABEL	D15		—	—	—
	26	PU58520-3	—	REAR LABEL	D16		—	—	—
	27	PU35870-1-5	—	CAUTION LABEL	D17		RD18EB3	—	ZENER DIODE, VZ=18V
	28	PQ10325-025	—	TUBE, FOR TF1	D18		—	—	—
	29	PQ10325-026	—	SPRING, FOR SWITCH PIN, X2	D19		ERA82-004	—	DIODE
	30	PQ10325-035	—	FUSE CLIP, X2	D20		1SS119	—	DIODE
					D21		1SS119	—	DIODE
					D22		RD12EB2	—	ZENER DIODE, VZ=12V
					D23		RD6.2EB2	—	ZENER DIODE, VZ=6.2V
					D24		RD9.1EB1	—	ZENER DIODE, VZ=9.1V
					C1		PQ10325-114	—	E CAP, 330/35
					C2		PQ10325-114	—	E CAP, 330/35
					C3		PQ10325-114	—	E CAP, 330/35
					C4		QFN31HK-104Z	—	MY CAP, 0.1
					C5		PQ10325-103	—	MY CAP, 0.068/100
					C6		QFN31HK-103Z	—	MY CAP, 0.01
					C7		PQ10325-104	—	E CAP, 33/35
					C8		QFN31HK-222Z	—	MY CAP, 2200P
					C9		QFN31HK-103Z	—	MY CAP, 0.01
					C10		PQ10325-105	—	E CAP, 10/16

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
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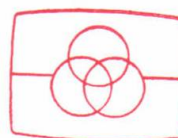
R41	QRD141J-472	CR, 4.7K 1/4W
R42	PQ10325-113	UNFLAMMABLE R, 0.05 2W
R43	QRD141J-392	CR, 3.9K 1/4W
R44	QRD141J-472	CR, 4.7K 1/4W
R45	QRD141J-302	CR, 3K 1/4W
R46	QRD141J-222	CR, 2.2K 1/4W
R47	QRD141J-102	CR, 1K 1/4W
R48	QRD141J-102	CR, 1K 1/4W
R49	QRD141J-244	CR, 240K 1/4 W
R50	QRD141J-105	CR, 1M 1/4W
R51	QRD141J-225	CR, 2.2M 1/4W
R52	QRD141J-102	CR, 1K 1/4W
R53	QRD141J-102	CR, 1K 1/4W
R54	QRD141J-332	CR, 3.3K 1/4W
RV1	PQ10325-151	VR, OUTPUT CURRENT ADJ. 1KB
RV2	PQ10325-152	VR, OUTPUT VOLTAGE ADJ. 2.2KB
RV3	PQ10325-152	VR, SHUTDOWN ADJ. 2.2KB
RV4	PQ10325-153	VR, TIMER ADJ. 200KB
L1	PQ10325-161	CHOKE COIL, 60 μ 3A
L2	PQ10325-162	CHOKE COIL, 250 μ 2.5A
L3	—	—
L4	PQ10325-163	CHOKE COIL, 100 μ 2A
T1	PQ10325-171	CONVERTER TRANSFORMER
△ TF1	PQ10325-172	THERMAL FUSE, 115°C 250 V 2A
△ CP1	ICP-N5	CIRCUIT TROTECTOR, 250 mA
△ F1	PQ10325-034	FUSE 250 V, T2.5A
DJ1	PQ10325-173	DC JACK
CN1H	PQ10325-174	CONNECTOR 6P HOUSING
	PQ10325-003	LED BOARD ASSEMBLY [02]
D6	SLB26VR	L.E.D
D15	SLB26VR	L.E.D
	PQ10325-006	SUB BOARD ASSEMBLY [03]
D16	D3S3M	DIODE
D18	RD18EB3	ZENER DIOED, VZ=18V
SW2	PQ10325-175	SWITCH
CN1P	PQ10325-176	CONNECTER, 6P BOARD POST

JVC

SERVICE MANUAL

CARRYING CASE

CB-V50U



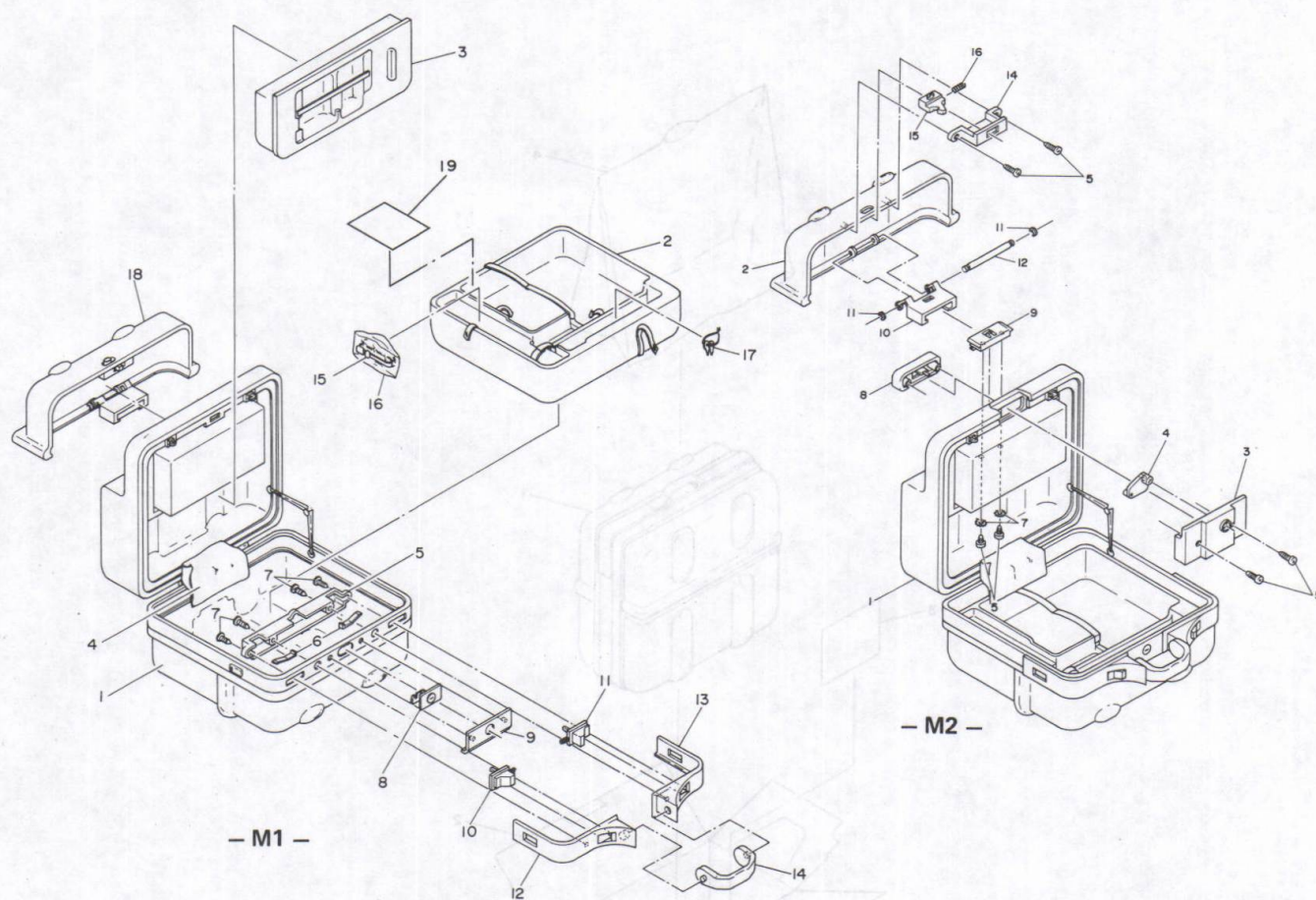
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EXPLODED VIEWS AND PARTS LIST

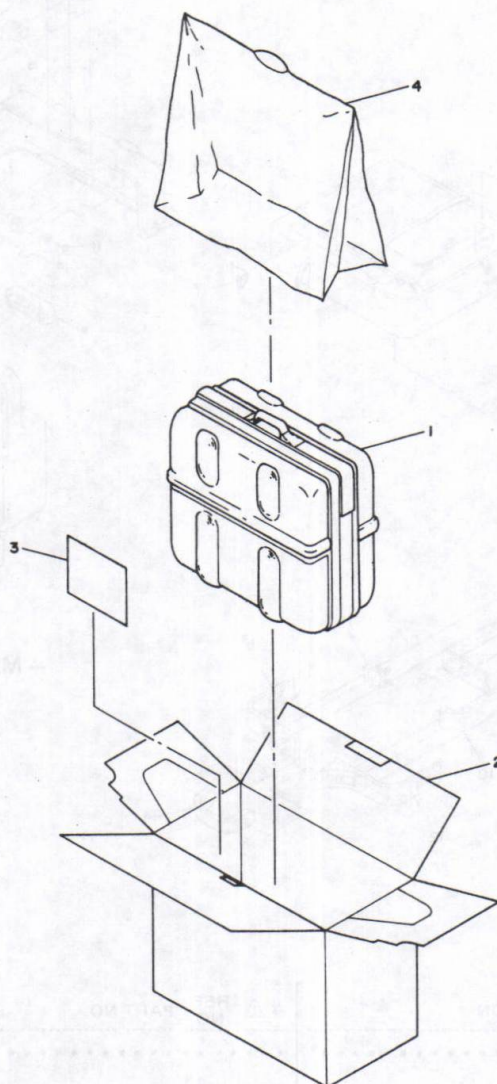


- PARTS LIST -

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
.....				
				CARRYING CASE ASSEMBLY [M1]
1			PQ10347-032	CASE ASSEMBLY
2			PQ10347-002	LOWER CUSION ASSEMBLY
3			PQ10347-003	UPPER CUSION ASSEMBLY
4			PQ10347-004	HINGE COVER
5			PQ10347-005	LOCK PLATE CASE
6			PQ10347-006	PLATE SPRING
7			PQ10347-007	SCREW, X 4
8			PQ10347-008	CYLINDER LOCK
9			PQ10347-009	HANDLE PLATE (1)
10			PQ10347-010	LOCK BOTTON ASSEMBLY (2), LEFT SIDE
11			PQ10347-011	LOCK BOTTON ASSEMBLY (1), RIGHT SIDE
12			PQ10347-012	HANDLE PLATE (2), LEFT SIDE
13			PQ10347-013	HANDLE PLATE (3), RIGHT SIDE
14			PQ10347-014	HANDLE
15			PU35752-5	SHOULDER BELT
16			PQ10347-015	POLY BAG FOR SHOULDER BELT
17			PQ10347-016	KEY
18			-	COVER ASSEMBLY, REFER TO [M2]
19			PU59493-2	CAUTION SHEET

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
.....				
				CARRYING CASE ASSEMBLY [M2]
1			-	CASE ASSEMBLY, REFER TO [M1]
2			PQ20346-2	COVER
3			PQ10347-017	BOTTOM COVER
4			PQ10347-018	BOTTON LOCK
5			PQ10347-007	SCREW, X 6
6			-	-
7			PQ10347-021	WASHER
8			PQ10347-022	FRONT LOCK ADAPTOR
9			PQ10347-023	HINGE COVER
10			PQ10347-024	HINNGE HOLDER
11			REE3500	E-RING
12			PQ10347-025	HINGE SHUFT
13			-	-
14			PQ10347-027	FRONT LOCK COVER
15			PQ10347-028	FRONT LOCK LEVER
16			PQ10347-029	SPRING

PACKING ASSEMBLY



— PART LIST —

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
.....			
			CARRYING CASE ASSEMBLY [M3]
1	—		CARRYING CASE ASSEMBLY [M1], [M2]
2	PU11429-2		PACKING CASE
3	PU36105-2		CAUTION SHEET
4	PQ10347-030		POLY BAG

JVC

SERVICE MANUAL

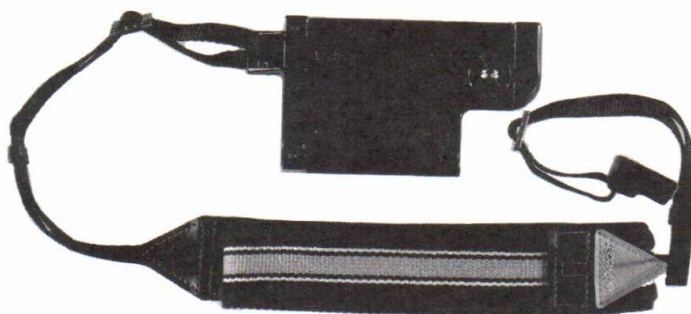
SHOULDER STRAP

VU-V17U



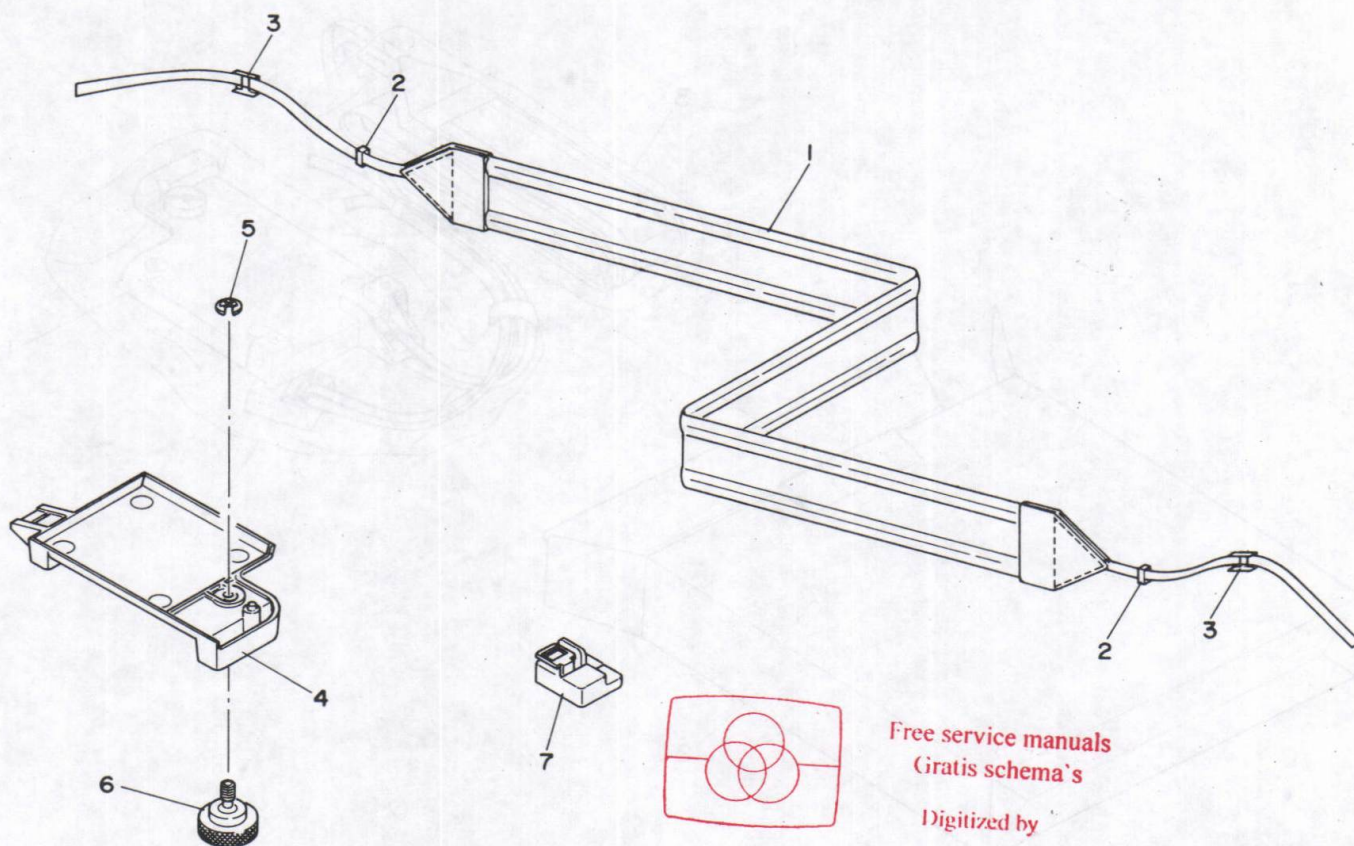
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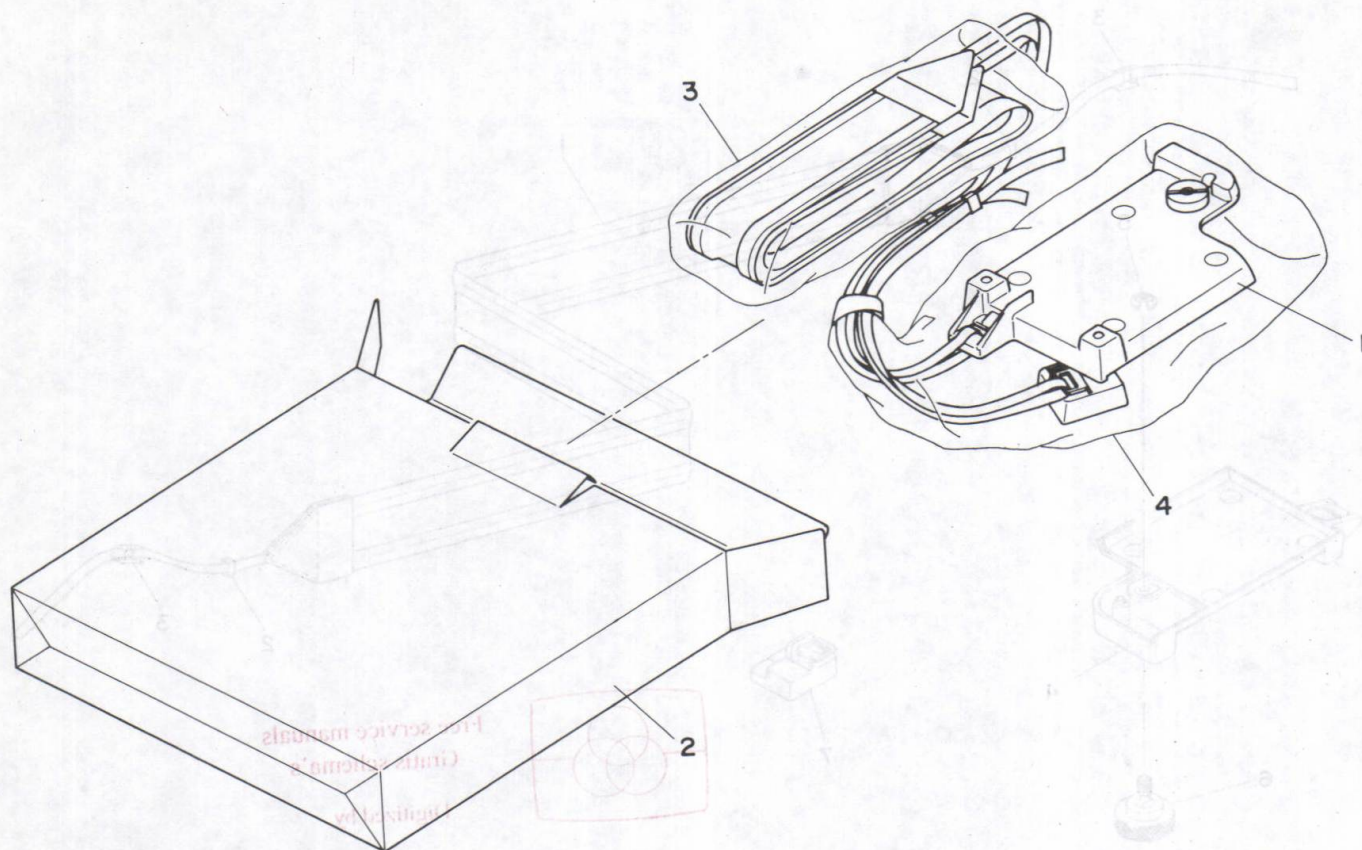
EXPLODED VIEWS AND PARTS LIST



— PART LIST —

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
.....				
SHOULDER STRAP ASSEMBLY [M1]				
1			PQ31394-2	SHOULDER BELT
2			PQ10348-001	BELT HOLDER, X 2
3			PQ10348-002	BELT ADJUSTER, X2
4			PQ10348-003	GONDRA
5			REE4000	E-RING
6			PQ10348-004	CAMERA SCREW
7			PQ10348-007	BUCKLE ASSEMBLY

PACKING ASSEMBLY



— PART LIST —

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
.....			
			SHOULDER STRAP ASSEMBLY [M2]
1	—		SHOULDER STRAP ASSEMBLY, REFER TO [M1]
2	PQ22335-2		PACKING CASE
3	PQ10348-006		POLY BAG, FOR BELT
4	PQ10348-005		POLY BAG, FOR GONDRA

JVC

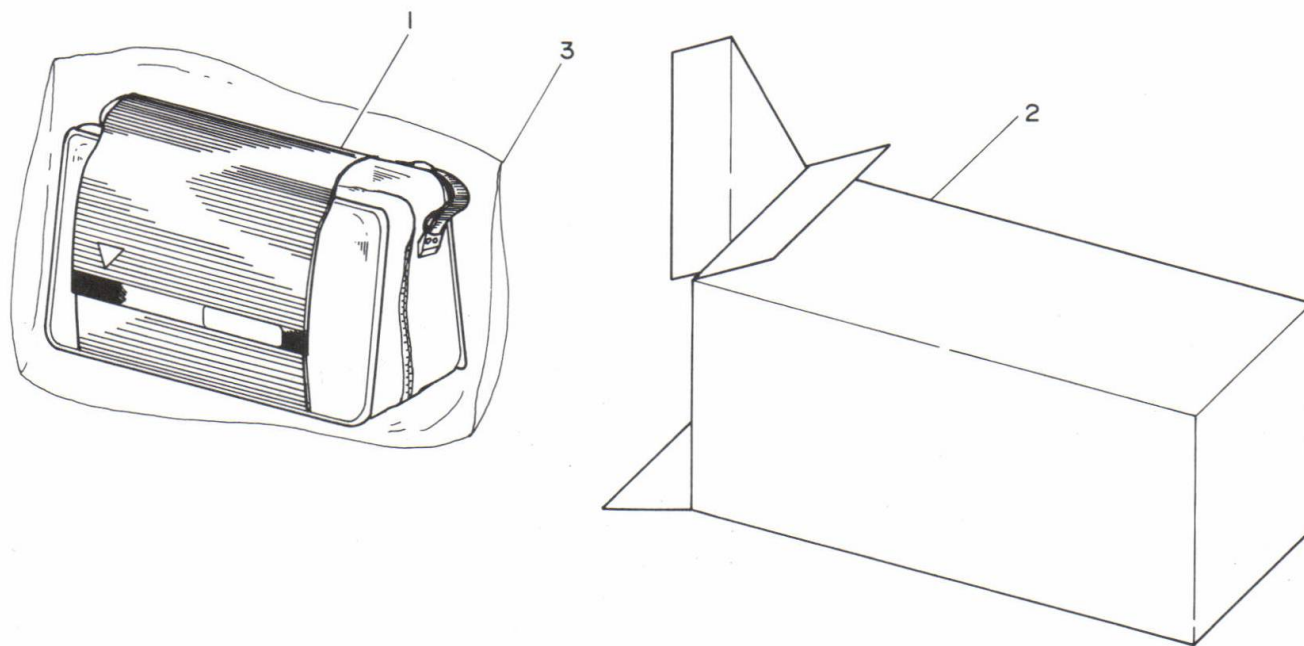
SERVICE MANUAL

CARRYING BAG

CB-V21U



PACKING ASSEMBLY



— PART LIST —

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
.....				
CARRYING BAG ASSEMBLY [M1]				
1		—		CARRYING BAG ASSEMBLY
2		PU11431		PACKING CASE
3		PQ10346-001		POLY BAG

MODEL **GR-C7EG/EK**

SECTION 4 DIAGRAMS AND CIRCUIT BOARDS

- MAIN
- Y/C
- SKEW JUMP
- OVERALL

SECTION 6 ELECTRICAL PARTS LIST

This is an addition to the No. 8458 Service Manual for the model GR-C7 EG/EK.

MAIN BOARD ASSEMBLY REPLACEMENT NOTES

1. If replacing an earlier MAIN board assembly (**01**) (PU11348F-1-C) with the later version, disconnect the connector CN1 on the END ALARM board assembly (**13**) (PU22483A-1-C).
2. If replacing a later MAIN board assembly (PU11348E-2-C, PU11348E-4-C or PU11348E-5-C) with the earlier version, install an END ALARM board assembly (PU22483A-1-C) and connect the connector CN1 on the END ALARM board assembly from MAIN board assembly.

For location of the END ALARM board assembly, refer to "page 5-2" of the provided in GR-C7EG/EK Service manual (No. 8458).

SECTION 6 PARTS LIST

△ REF. NO. PART NO. PART NAME, DESCRIPTION

PU11348F-1-C MAIN BOARD ASS'Y [01]

— REGULATOR SECTION —

△ IC1 S-81250AG INTEGRATED CIRCUIT

Q1 DTA124EK CHIP DIGITAL TRANSISTOR
OR UN2112 CHIP DIGITAL TRANSISTOR
Q2 DTA124EK CHIP DIGITAL TRANSISTOR
OR UN2112 CHIP DIGITAL TRANSISTOR
Q3 2SD601 CHIP TRANSISTOR
Q4 2SD601 CHIP TRANSISTOR

D1 ERA81-004 DIODE
D2 RD3.9M-T18 CHIP ZENER DIODE
D3 RD5.6M-T2B CHIP ZENER DIODE
D4 MA151WK CHIP DIODE
OR DAN202K CHIP DIODE
D5 MA151WK CHIP DIODE
OR DAN202K CHIP DIODE

R1 QRD167J-683 CR
R2 QRSA08J-684YN CHIP R
R3 QRSA08J-100YN CHIP R
R4 QRSA08J-121YN CHIP R
R5 QRSA08J-271YN CHIP R
R6 QRSA08J-102YN CHIP R
R7 QRSA08J-102YN CHIP R
R8 QRSA08J-125YN CHIP R

C1 —
C2 QEK41CM-476 E CAP
C3 QEK41CM-476 E CAP
C4 QED41CM-476 E CAP
C5 QED41CM-476 E CAP
C6 QED41AM-826 E CAP
C7 QED41AM-826 E CAP
C8 QEMA1AM-107 E CAP

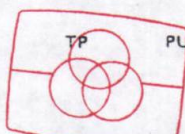
△ RY1 PU56400-2 RELAY

JACK1 PU57179 DC JACK

△ REF. NO. PART NO. PART NAME, DESCRIPTION

△ F1 QMF51E2-3R15 FUSE
(NOT INCL. IN MAIN BOARD ASS'Y)
△ FC1 PU57505 FUSE CLIP, FOR F1, X2

△ CP1 ICP-F15 CIRCUIT PROTECTOR
△ CP2 ICP-F20 CIRCUIT PROTECTOR
△ CP3 ICP-F20 CIRCUIT PROTECTOR
△ CP4 ICP-F15 CIRCUIT PROTECTOR
△ CP5 ICP-F20 CIRCUIT PROTECTOR



TP PU56278 TEST PIN, TP1, 2
△ DC CONV PU58603-2 DC-DC CONVERTER

— VOL. DET BOARD ASS'Y
(INCLUDED IN MAIN BOARD ASS'Y)

IC2 NJM2904E INTEGRATED CIRCUIT

Q5 DTC143XK CHIP DIGITAL TRANSISTOR
Q6 DTC143XK CHIP DIGITAL TRANSISTOR

R10 QRSA08J-104YN CHIP R
R11 QRSA08J-104YN CHIP R
R12 QRSA08J-104YN CHIP R
R13 QRSA08J-104YN CHIP R

B1 QRSA08J-0R0Y CHIP R
B2 QRSA08J-0R0Y CHIP R
B3 QRSA08J-0R0Y CHIP R
B4 QRSA08J-0R0Y CHIP R

C10 QCYA1HK-103 CHIP CAP
C11 QCYA1HK-103 CHIP CAP

— SERVO SECTION —

IC101 BA8526K FLAT IC
OR BA8527K FLAT IC
IC102 BAF6305 FLAT IC
IC103 PU22441A-2-C F/V MOD. (JC001)
IC104 M51797FP FLAT IC
IC105 M50252FP FLAT IC
IC106 M51722FP FLAT IC
IC107 M54643L INTEGRATED CIRCUIT
IC108 AFC74A001X1 INTEGRATED CIRCUIT
IC109 M5223FP FLAT IC
OR UPC1251G FLAT IC

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
Q101			2SK621	CHIP DIGITAL FET	R105			PU59237-224	CHIP VR, PB SW POINT
Q102			-	-		OR		PU57816-2-224	CHIP VR
Q103			-	-		OR		QVZ3606-224	CHIP VR
Q104			2SD601	CHIP TRANSISTOR		OR		PU59456-224	CHIP VR
	OR		2SC2412K	CHIP TRANSISTOR	R106			QRSA08J-563YN	CHIP R
Q105			2SB709	CHIP TRANSISTOR	R107			-	-
	OR		2SA1037K	CHIP TRANSISTOR	R108			QRSA08J-104YN	CHIP R
Q106			2SB709	CHIP TRANSISTOR	R109			PU59237-683	CHIP VR, REC SW POINT
	OR		2SA1037K	CHIP TRANSISTOR		OR		PU57816-2-683	CHIP VR
Q107			2SD601	CHIP TRANSISTOR		OR		PU59456-683	CHIP VR
	OR		2SC2412K	CHIP TRANSISTOR	R110			QRSA08J-104YN	CHIP R
Q108			-	-					
Q109			-	-	R111			PU59237-104	CHIP VR, LP CTL DELAY
Q110			2SB709	CHIP TRANSISTOR		OR		PU57816-2-104	CHIP VR
	OR		2SA1037K	CHIP TRANSISTOR		OR		PU59456-104	CHIP VR
Q111			2SK621	CHIP DIGITAL FET	R112			QRSA08J-104YN	CHIP R
Q112			2SK621	CHIP DIGITAL FET	R113			PU59237-104	CHIP VR, SP CTL DELAY
Q113			2SK621	CHIP DIGITAL FET		OR		PU57816-2-104	CHIP VR
Q114			-	-		OR		PU59456-104	CHIP VR
Q115			2SA1365-T1G	CHIP TRANSISTOR	R114			QRSA08J-823YN	CHIP R
	OR		2SB710S	CHIP TRANSISTOR	R115			-	-
	OR		2SA1036K(R)	CHIP TRANSISTOR	R116			QRSA08J-184YN	CHIP R
	OR		2SB624-T1BBV5	CHIP TRANSISTOR	R117			QRSA08J-105YN	CHIP R
Q116			2SA1365-T1G	CHIP TRANSISTOR	R118			-	-
	OR		2SA1036K(R)	CHIP TRANSISTOR	R119			-	-
	OR		2SB624-T1BBV5	CHIP TRANSISTOR	R120			QRSA08J-473YN	CHIP R
	OR		2SB710S	CHIP TRANSISTOR					
Q117			2SA1365-T2G	CHIP TRANSISTOR	R121			QRSA08F-224YN	CHIP R
	OR		2SA1036K(R)	CHIP TRANSISTOR	R122			QRSA08F-153YN	CHIP R
	OR		2SB624-T2BBV5	CHIP TRANSISTOR	R123			QRSA08J-104YN	CHIP R
	OR		2SB710S	CHIP TRANSISTOR	R124			QRSA08J-334YN	CHIP R
Q118			2SA1365-T2G	CHIP TRANSISTOR	R125			QRSA08J-102YN	CHIP R
	OR		2SA1036K(R)	CHIP TRANSISTOR	R126			-	-
	OR		2SB624-T2BBV5	CHIP TRANSISTOR	R127			-	-
	OR		2SB710S	CHIP TRANSISTOR	R128			QRSA08J-561YN	CHIP R
Q119			2SK621	CHIP DIGITAL FET	R129			QRSA08J-105YN	CHIP R
Q120			2SK621	CHIP DIGITAL FET	R130			QRSA08J-104YN	CHIP R
Q121			2SB709	CHIP TRANSISTOR	R131			QRSA08J-221YN	CHIP R
	OR		2SA1037K	CHIP TRANSISTOR	R132			QRSA08J-102YN	CHIP R
Q122			2SD601	CHIP TRANSISTOR	R133			QRSA08J-105YN	CHIP R
	OR		2SC2412K	CHIP TRANSISTOR	R134			QRSA08J-223YN	CHIP R
Q128			2SC2412K	CHIP TRANSISTOR	R135			QRSA08J-102YN	CHIP R
	OR		2SD601	CHIP TRANSISTOR	R136			QRSA08J-103YN	CHIP R
Q129			2SK621	CHIP DIGITAL FET	R137			QRSA08J-103YN	CHIP R
D101			DA204K	CHIP DIODE	R138			-	-
D102			-	-	R139			-	-
D103			-	-	R140			-	-
D104			DAP202K	CHIP DIODE	R141			-	-
R101			QRSA08J-103YN	CHIP R	R142			-	-
R102			QRSA08J-103YN	CHIP R	R143			-	-
R103			-	-	R144			-	-
R104			-	-	R145			-	-
					R146			-	-
					R147			-	-
					R148			-	-
					R149			QRSA08J-105YN	CHIP R
					R150			QRSA08J-224YN	CHIP R
					R151			QRSA08J-683YN	CHIP R
					R152			QRSA08J-223YN	CHIP R
					R153			-	-
					R154			QRSA08J-105YN	CHIP R
					R155			QRSA08J-224YN	CHIP R

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
R156			-	-	R213		QRSA08J-104YN	CHIP R	
R157		QRSA08J-103YN	CHIP R		R214		QRSA08J-472YN	CHIP R	
R158		QRSA08J-105YN	CHIP R		R215		-	-	
R159		QRSA08J-224YN	CHIP R		R216		QRSA08J-0R0Y	CHIP R	
R160		QRSA08J-473YN	CHIP R		R217		-	-	
					R218		PU59237-103	CHIP VR, DRUM PULSE	
R161		QRSA08J-393YN	CHIP R				OR PU57816-2-103	CHIP VR	
R162		QRSA08J-105YN	CHIP R				OR PU59456-103	CHIP VR	
R163		QRSA08J-154YN	CHIP R		R219		-	-	
R164		QRSA08J-334YN	CHIP R		R220		-	-	
R165		QRSA08J-184YN	CHIP R						
R166		QRSA08J-334YN	CHIP R		R221		-	-	
R167		QRSA08J-104YN	CHIP R		R222		-	-	
R168		QRSA08J-563YN	CHIP R		R223		QRSA08J-223YN	CHIP R	
R169		QRSA08J-104YN	CHIP R		R224		-	-	
R170		QRSA08J-474YN	CHIP R		R225		-	-	
					R226		QRSA08J-332YN	CHIP R	
R171		-	-		R227		QRSA08J-332YN	CHIP R	
R172		-	-		R228		QRSA08J-332YN	CHIP R	
R173		-	-		R229		QRSA08J-332YN	CHIP R	
R174		QRSA08J-182YN	CHIP R						
R175		QRSA08J-221YN	CHIP R		R235		QRSA08J-273YN	CHIP R	
R176		QRSA08J-221YN	CHIP R		R236		QRSA08J-123YN	CHIP R	
R177		QRSA08J-472YN	CHIP R		R237		QRSA08J-102YN	CHIP R	
R178		QRSA08J-183YN	CHIP R		R238		QRSA08J-103YN	CHIP R	
R179		QRSA08J-333YN	CHIP R						
R180		QRSA08J-183YN	CHIP R						
R181		QRSA08J-223YN	CHIP R		TH101		ERT-D2FIK-154S	THERMISTOR	
R182		QVZ3606-333	CHIP VR, TRACKING PRESET						
R183		QRSA08J-102YN	CHIP R		B101		QRSA08J-0R0Y	CHIP R	
R184		QRSA08J-102YN	CHIP R		B102		-	-	
R185		PU56399-4	VR, TRACKING VR, 500 K		B103		-	-	
R186		-	-		B104		QRSA08J-0R0Y	CHIP R	
R187		PU59237-333	CHIP VR, CAP. SAMPLING		B105		QRD161J-0R0	CR	
		OR PU57816-2-333	CHIP VR		B106		-	-	
		OR PU59456-333	CHIP VR		B107		-	-	
R188		QRSA08J-153YN	CHIP R		B108		QRSA08J-0R0Y	CHIP R	
R189		QRSA08J-822YN	CHIP R		B109		-	-	
R190		QRSA08J-333YN	CHIP R		B110		QRSA08J-0R0Y	CHIP R	
R191		-	-						
R192		QRSA08J-102YN	CHIP R		C101		QCYA1HK-103	CHIP CAP	
R193		QRSA08J-473YN	CHIP R		C102		QCYA1HK-103	CHIP CAP	
R194		QRSA08J-105YN	CHIP R		C103		QER41EM-475	E CAP	
R195		QRSA08J-105YN	CHIP R		C104		QFJ41HJ-153	MY CAP	
R196		QRSA08J-103YN	CHIP R		C105		QER41EM-475	E CAP	
R197		QRSA08J-223YN	CHIP R		C106		QCSA1HJ-391	CHIP CAP	
R198		QRSA08J-822YN	CHIP R		C107		QFJ41HJ-273	MY CAP	
R199		QRSA08J-103YN	CHIP R		C108		QFZ9011-224	MP CAP	
R200		QRSA08J-103YN	CHIP R		C109		PU60038-333	PP CAP	
					C110		QFZ9011-124	MP CAP	
R201		QRSA08J-103YN	CHIP R						
R202		QRSA08K-4R7YN	CHIP R		C111		QEE81AM-226	T CAP	
R203		QRSA08K-4R7YN	CHIP R		C112		QFJ41HJ-683	MY CAP	
R204		QRSA08J-181YN	CHIP R		C113		QFZ9011-104	MP CAP	
R205		QRSA08J-181YN	CHIP R		C114		QFJ41HJ-223	MY CAP	
R206		QRSA08K-4R7YN	CHIP R		C115		QCDA1EM-333	CHIP CAP	
R207		QRSA08K-4R7YN	CHIP R		C116		QCSA1HJ-391	CHIP CAP	
R208		QRSA08J-102YN	CHIP R						
R209		-	-						
R210		QRSA08J-103YN	CHIP R						
R211		-	-						
R212		QRSA08J-102YN	CHIP R						

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
C117			QCYA1HK-102	CHIP CAP	- AUDIO SECTION -				
C118			QCSA1HJ-681	CHIP CAP	IC301		AN3991NS		FLAT IC
C119			QER40JM-107	E CAP	IC302		7VT10		INTEGRATED CIRCUIT
C120			QER41CM-106	E CAP					
C121			QCSA1HJ-221	CHIP CAP	Q301		-		-
C122			QER41HM-105	E CAP	Q302		2SK621		CHIP DIGITAL FET
C123			QCYA1HK-103	CHIP CAP			OR DTC144EK		CHIP DIGITAL TRANSISTOR
C124			QER40JM-476	E CAP			OR 2SC3395		CHIP DIGITAL TRANSISTOR
C125			QCYA1HK-102	CHIP CAP	Q303		2SK621		CHIP DIGITAL FET
C126			QCFA1EZ-104	CHIP CAP			OR DTC144EK		CHIP DIGITAL TRANSISTOR
C127			QER40JM-476	E CAP			OR 2SC3395		CHIP DIGITAL TRANSISTOR
C128			-	-	Q304		2SK621		CHIP DIGITAL FET
C129			-	-			OR DTC144EK		CHIP DIGITAL TRANSISTOR
C130			-	-			OR 2SC3395		CHIP DIGITAL TRANSISTOR
C131			-	-	Q305		2SK621		CHIP DIGITAL FET
C132			-	-			OR DTC144EK		CHIP DIGITAL TRANSISTOR
C133			-	-			OR 2SC3395		CHIP DIGITAL TRANSISTOR
C134			-	-	Q306		2SK621		CHIP DIGITAL FET
C135			-	-			OR DTC144EK		CHIP DIGITAL TRANSISTOR
C136			QEL41EM-475E	E CAP			OR 2SC3395		CHIP DIGITAL TRANSISTOR
C137			QEL41EM-475E	E CAP	Q307		2SD601		CHIP TRANSISTOR
C138			-	-	Q308		2SD601		CHIP TRANSISTOR
C139			QFZ0095-104	MP CAP	Q309		2SB709		CHIP TRANSISTOR
C140			-	-	Q310		DTA124EK		CHIP DIGITAL TRANSISTOR
C141			QEL41CM-106E	E CAP			OR UN2112		CHIP DIGITAL TRANSISTOR
C142			QEL41CM-106E	E CAP	Q311		2SK621		CHIP DIGITAL FET
C143			QFZ9011-334	MP CAP			OR DTC144EK		CHIP DIGITAL TRANSISTOR
C144			QCFA1EZ-104	CHIP CAP			OR 2SC3395		CHIP DIGITAL TRANSISTOR
C145			QER40JM-476	E CAP	Q312		DTA124EK		CHIP DIGITAL TRANSISTOR
C146			QER41CM-106	E CAP			OR UN2112		CHIP DIGITAL TRANSISTOR
C147			QER41CM-106	E CAP					
C148			QER40JM-476	E CAP	D301		1SS133		DIODE
C149			QFZ0095-393	MP CAP					
C150			QFZ0096-104	MP CAP	R301		QRSA08J-220YN		CHIP R
	OR		QFZ0095-104	MP CAP	R302		QRSA08J-103YN		CHIP R
C151			QER41HM-105	E CAP	R303		QRSA08J-153YN		CHIP R
C152			-	-	R304		QRSA08J-223YN		CHIP R
C153			QCYA1HK-102	CHIP CAP	R305		QRSA08J-223YN		CHIP R
C154			QER41HM-225	E CAP	R306		QRSA08J-121YN		CHIP R
C155			QCSA1HJ-331	CHIP CAP	R307		QRSA08J-822YN		CHIP R
C156			QCSA1HJ-101	CHIP CAP	R308		QRSA08J-103YN		CHIP R
C157			QCFA1EZ-104	CHIP CAP	R309		QRSA08J-0R0Y		CHIP R
C158			QCFA1EZ-104	CHIP CAP	R310		QRSA08J-0R0Y		CHIP R
C159			QEPA1CM-106	NP CAP					
C160			-	-	R311		QRSA08J-122YN		CHIP R
C161			QCYA1HK-102	CHIP CAP	R312		QRSA08J-561YN		CHIP R
C162			-	-	R313		QRSA08J-181YN		CHIP R
C163			QCYA1HK-332	CHIP CAP	R314		PU59237-103		CHIP VR, AUDIO REC LEVEL
C164			QCYA1EK-223	CHIP CAP			OR PU57816-2-103		CHIP VR
C165			QCYA1EK-223	CHIP CAP			OR PU59456-103		CHIP VR
C166			QCYA1EK-223	CHIP CAP	R315		QRSA08J-682YN		CHIP R
C167			QCYA1HK-102	CHIP CAP	R316		QRSA08J-472YN		CHIP R
C168			QCSA1HJ-151	CHIP CAP	R317		QRSA08J-392YN		CHIP R
C169			QCFA1EZ-104	CHIP CAP	R318		QRSA08J-103YN		CHIP R
					R319		QRSA08J-222YN		CHIP R
					R320		QRSA08J-0R0Y		CHIP R
					R321		QRSA08J-681YN		CHIP R
△		X'TAL 1	PU47701	CRYSTAL					
TP		PU56278		TEST PIN, TP101-117					

△ REF. NO. PART NO. PART NAME, DESCRIPTION

R322	PU59237-222	CHIP VR, AUDIO PB LEVEL
	OR PU57816-2-222	CHIP VR
	OR PU59456-222	CHIP VR
R323	QRSA08J-392YN	CHIP R
R324	QRSA08J-124YN	CHIP R
R325	QRSA08J-221YN	CHIP R
R326	QRSA08J-103YN	CHIP R
R327	QRSA08J-273YN	CHIP R
R328	QRSA08J-102YN	CHIP R
R329	QRSA08J-222YN	CHIP R
R330	-	-
R331	-	-
R332	-	-
R333	QRSA08J-105YN	CHIP R
R334	QRSA08J-103YN	CHIP R
R335	QRSA08J-560YN	CHIP R
R336	QRSA08J-103YN	CHIP R
R337	QRSA08J-102YN	CHIP R
R338	QRSA08J-392YN	CHIP R
R339	QRSA08J-102YN	CHIP R
R340	QRSA08J-823YN	CHIP R
R341	QRSA08J-103YN	CHIP R
R342	-	-
R343	-	-
R344	QVZ3606-683	CHIP VR, AUDIO BIAS LEVEL
R345	QRSA08J-100YN	CHIP R
R346	QRSA08J-123YN	CHIP R
R347	-	-
R348	QRSA08J-0R0Y	CHIP R
R349	QRSA08J-103YN	CHIP R
R350	QRSA08J-122YN	CHIP R
R351	-	-
R352	-	-
R353	QRD163J-0R0	CR
R354	QRD163J-0R0	CR
R355	QRD161J-123	CR
C301	QER40JM-476	E CAP
C302	-	-
C303	QER41EM-335	E CAP
C304	QER40JM-226	E CAP
C305	QCSA1HJ-121	CHIP CAP
C306	QER41HM-474	E CAP
C307	QCYA1HK-332	CHIP CAP
C308	QFZ9011-563	MP CAP
C309	QCYA1HK-103	CHIP CAP
C310	QER41EM-335	E CAP
C311	QER41EM-335	E CAP
C312	QER41HM-474	E CAP
C313	QER41HM-225	E CAP
C314	QCYA1EK-223	CHIP CAP
C315	QER41HM-474	E CAP
C316	QER41CM-106	E CAP
C317	QER41HM-474	E CAP
C318	QER40JM-336	E CAP
C319	QCYA1HK-392	CHIP CAP
C320	QCSA1HJ-681	CHIP CAP

△ REF. NO. PART NO. PART NAME, DESCRIPTION

C321	-	-
C322	-	-
C323	QER41HM-104	E CAP
C324	-	-
C325	QER41HM-225	E CAP
C326	QER40JM-226	E CAP
C327	QER41HM-225	E CAP
C328	QER40JM-226	E CAP
C329	QCSA1HJ-471	CHIP CAP
C330	QCSA1HJ-471	CHIP CAP
C331	QER41AM-336	E CAP
C332	QFZ9011-823	MP CAP
C333	QCSA1HJ-471	CHIP CAP
C334	QCYA1HK-822	CHIP CAP
C335	-	-
C336	QER41HM-224	E CAP

L301	PU56197-2	CHIP EQUALIZER
L302	PU58610	CHIP TRAP COIL
L303	PU55843-331K	CHIP COIL
△ L304	PU58611	OSC COIL
L305	PU55843-101K	CHIP COIL

TP PU56278 TEST PIN, TP302-305

- MECHACON SECTION -

△ IC401	HD6305Y0A76F	FLAT IC
IC402	-	-
IC403	MN74HC244S	FLAT IC
	OR SN74HC244NS	FLAT IC
IC404	MN74HC244S	FLAT IC
	OR SN74HC244NS	FLAT IC
IC405	MN74HC244S	FLAT IC
	OR SN74HC244NS	FLAT IC
IC406	BA6109U2	INTEGRATED CIRCUIT
IC407	AN6564NS	FLAT IC
IC408	MN4071BS	FLAT IC
IC409	MN4069UBS	FLAT IC
IC410	MN4011BS	FLAT IC
IC411	MN4081BS	FLAT IC
IC412	UPD7564G-503	FLAT IC

Q401	-	-
Q402	2SK621	CHIP DIGITAL FET
Q403	2SK621	CHIP DIGITAL FET
Q404	2SK621	CHIP DIGITAL FET
Q405	2SK621	CHIP DIGITAL FET
Q406	2SK621	CHIP DIGITAL FET
Q407	2SK621	CHIP DIGITAL FET
Q408	2SK621	CHIP DIGITAL FET
Q409	2SK621	CHIP DIGITAL FET
Q410	2SK621	CHIP DIGITAL FET

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
Q411		2SK621		CHIP DIGITAL FET	R438		QRSA08J-474YN		CHIP R
Q412		2SK621		CHIP DIGITAL FET	R439		QRSA08J-823YN		CHIP R
Q413		2SB709		CHIP TRANSISTOR	R440		QRSA08K-475YN		CHIP R
Q414		2SK656		DIGITAL MOS FET					
D401		MA151WK		CHIP DIODE	R441		QRSA08J-103YN		CHIP R
D402		MA151WA		CHIP DIODE	R442		QRSA08J-105YN		CHIP R
D403		MA151WA		CHIP DIODE	R443		QRSA08J-103YN		CHIP R
D404		MA151A		CHIP DIODE	R444		QRSA08J-103YN		CHIP R
D405		-		-	R445		QRSA08J-104YN		CHIP R
D406		-		-	R446		QRSA08J-181YN		CHIP R
D407		MA3075M		CHIP ZENER DIODE	R447		QRSA08J-105YN		CHIP R
		OR MA3075H		CHIP ZENER DIODE	R448		QRSA08J-684YN		CHIP R
		OR RD7.5M-T1B2		CHIP ZENER DIODE	R449		QRSA08J-105YN		CHIP R
		OR RD7.5M-T1B3		CHIP ZENER DIODE	R450		QRSA08J-102YN		CHIP R
D408		MA151WA		CHIP DIODE	R451		QRSA08J-105YN		CHIP R
D409		MA151K		CHIP DIODE	R452		QRSA08J-125YN		CHIP R
R401		QRSA08J-153YN		CHIP R	R453		QRSA08J-105YN		CHIP R
R402		QRSA08J-153YN		CHIP R	R454		-		-
R403		QRSA08J-153YN		CHIP R	R455		QRSA08J-153YN		CHIP R
R404		QRSA08J-103YN		CHIP R	R456		QRSA08J-153YN		CHIP R
R405		QRSA08J-103YN		CHIP R	R457		QRSA08J-153YN		CHIP R
R406		QRSA08J-223YN		CHIP R	R458		-		-
R407		QRSA08J-153YN		CHIP R	R459		-		-
R408		-		-	R460		-		-
R409		-		-	R461		QRSA08J-102YN		CHIP R
R410		-		-	R462		QRSA08J-102YN		CHIP R
R411		QRSA08J-102YN		CHIP R	R463		QRSA08J-102YN		CHIP R
R412		QRSA08J-102YN		CHIP R	R464		QRSA08J-564YN		CHIP R
R413		QRSA08J-102YN		CHIP R	R465		QRSA08J-104YN		CHIP R
R414		QRSA08J-105YN		CHIP R	R466		QRSA08J-225YN		CHIP R
R415		QRSA08J-104YN		CHIP R	R467		QRSA08J-102YN		CHIP R
R416		QRSA08J-104YN		CHIP R	R468		QRSA08J-104YN		CHIP R
R417		QRSA08J-104YN		CHIP R	R469		QRSA08J-102YN		CHIP R
R418		QRSA08J-104YN		CHIP R	R470		QRSA08J-104YN		CHIP R
R419		QRSA08J-104YN		CHIP R	R471		QRSA08J-102YN		CHIP R
R420		QRSA08J-104YN		CHIP R	R472		QRSA08J-104YN		CHIP R
R421		QRSA08J-104YN		CHIP R	R473		QRSA08J-102YN		CHIP R
R422		QRSA08J-104YN		CHIP R	R474		QRSA08J-104YN		CHIP R
R423		QRSA08J-474YN		CHIP R	R475		QRSA08J-102YN		CHIP R
R424		QRSA08J-105YN		CHIP R	R476		-		-
R425		QRSA08J-153YN		CHIP R	R477		QRSA08J-104YN		CHIP R
R426		QRSA08J-102YN		CHIP R	R478		QRSA08J-104YN		CHIP R
R427		QRSA08J-153YN		CHIP R	R479		QRSA08J-222YN		CHIP R
R428		QRSA08J-153YN		CHIP R	R480		QRSA08J-102YN		CHIP R
R429		QRSA08J-102YN		CHIP R	R481		QRSA08J-102YN		CHIP R
R430		QRSA08J-102YN		CHIP R	R482		QRSA08J-102YN		CHIP R
R431		QRSA08J-563YN		CHIP R	R483		QRSA08J-102YN		CHIP R
R432		-		-	R484		QRSA08J-102YN		CHIP R
R433		QRSA08J-474YN		CHIP R	R485		QRSA08J-102YN		CHIP R
R434		QRSA08J-123YN		CHIP R	R486		QRSA08J-102YN		CHIP R
R435		QRSA08J-224YN		CHIP R	R487		QRSA08J-102YN		CHIP R
R436		PU59237-154		CHIP VR, BATTERY ALARM	R488		QRSA08J-103YN		CHIP R
		OR PU57816-2-154		CHIP VR	R489		QRSA08J-103YN		CHIP R
		OR PU59456-154		CHIP VR	R490		QRSA08J-103YN		CHIP R
R437		QRSA08J-184YN		CHIP R	R491		QRSA08J-103YN		CHIP R
					R492		QRSA08J-472YN		CHIP R
					R493		QRSA08J-472YN		CHIP R
					R494		QRSA08J-103YN		CHIP R
					R495		QRSA08J-103YN		CHIP R
					R496		QRSA08J-102YN		CHIP R

▲ REF. NO. PART NO. PART NAME, DESCRIPTION

R497 QRSA08J-103YN CHIP R
 R498 QRSA08J-223YN CHIP R
 R499 QRSA08J-103YN CHIP R
 R500 QRSA08J-223YN CHIP R

R501 QRSA08J-103YN CHIP R
 R502 QRSA08J-223YN CHIP R
 R503 QRSA08J-103YN CHIP R
 R504 QRSA08J-223YN CHIP R
 R505 QRSA08J-103YN CHIP R
 R506 QRSA08J-102YN CHIP R
 R507 QRSA08J-102YN CHIP R
 R508 QRSA08J-102YN CHIP R
 R509 QRSA08J-102YN CHIP R
 R510 QRSA08J-125YN CHIP R

R511 QRSA08J-102YN CHIP R
 R512 QRSA08J-102YN CHIP R
 R513 QRSA08J-102YN CHIP R
 R514 QRSA08J-271YN CHIP R
 R515 QRSA08J-102YN CHIP R
 R516 QRSA08J-0R0Y CHIP R
 R517 — —
 R518 QRSA08J-682YN CHIP R
 R519 QRD161J-103 CR

C401 QCFA1EZ-104 CHIP CAP
 C402 QCFA1EZ-104 CHIP CAP
 C403 — —
 C404 — —
 C405 — —
 C406 QCFA1HZ-473 CHIP CAP
 C407 QCYA1HK-222 CHIP CAP
 C408 — —
 C409 — —
 C410 — —

C411 — —
 C412 QCFA1EZ-104 CHIP CAP
 C413 QER41HM-105 E CAP
 C414 QCSA1HJ-270 CHIP CAP
 C415 QCSA1HJ-270 CHIP CAP
 C416 QCFA1EZ-104 CHIP CAP
 C417 QEF81AM-475 CHIP T CAP
 C418 QCYA1HK-103 CHIP CAP
 C419 QCFA1EZ-104 CHIP CAP
 C420 QCSA1HJ-561 CHIP CAP

C426 QEF81AM-475 CHIP T CAP
 C427 QCFA1EZ-104 CHIP CAP
 C428 QEF81AM-475 CHIP T CAP
 C429 QCSA1HJ-101 CHIP CAP
 C430 QCSA1HJ-101 CHIP CAP

L401 PU59188-101K CHIP COIL

▲ CF401 PU58780 CERAMIC FILTER
 CF402 PU59892 CERAMIC FILTER

▲ REF. NO. PART NO. PART NAME, DESCRIPTION

▲ TH401 PU52108-2R2 POSISTOR

TP PU56278 TEST PIN, TP401

SH1 PU59997 SHEET

SLD1 PQ42544 INSULATOR

CN1 PU58655-3 CAP. HOUSING

CN2 PU58655-3 CAP. HOUSING

CN3 PU58655-2 CAP. HOUSING

CN4 PU58655-4 CAP. HOUSING

CN5A PU58655-7 CAP. HOUSING

CN6 PU58655-2 CAP. HOUSING

CN7 PU58250-8 CAP. HOUSING

CN8 PU58250-10 CAP. HOUSING

CN9 PU58250-16 CAP. HOUSING

CN10A PU58655-5 CAP. HOUSING

CN10B PU58253-7 CAP. HOUSING

CN11 PU58250-10 CAP. HOUSING

CN12 PU58250-10 CAP. HOUSING

CN13 PU58655-7 CAP. HOUSING

CN14 PU58655-2 CAP. HOUSING

CN15 PU58655-3 CAP. HOUSING

CN16 PU58655-2 CAP. HOUSING

CN17 PU58655-5 CAP. HOUSING

CN18 PU58655-14 CAP. HOUSING

CN19 PU58655-4 CAP. HOUSING

CN20 PU58655-4 CAP. HOUSING

CN21 PU58655-3 CAP. HOUSING

.....
 PU11506A1-02-C Y/C BOARD ASS'Y [02]

IC1 AN3212S FLAT IC

IC2 H8D7025B INTEGRATED CIRCUIT

IC3 AN3323S FLAT IC

IC4 H8DN7026A INTEGRATED CIRCUIT

IC5 BX7383 INTEGRATED CIRCUIT

IC6 BA7241F FLAT IC

IC7 H8D70048 INTEGRATED CIRCUIT

IC8 H8D1927B INTEGRATED CIRCUIT

IC9 H8D7027A INTEGRATED CIRCUIT

IC10 THE045A INTEGRATED CIRCUIT

#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	△	REF. NO.	PART NO.	PART NAME, DESCRIPTION
		IC11	BA7131F	FLAT IC			R12	PU59237-681	CHIP VR, REC COLOUR LEVEL
							OR	PU59456-681	CHIP VR
		Q1	DTC144EK	CHIP DIGITAL TRANSISTOR			R13	PU59237-102	CHIP VR, BURST LEVEL
		Q2	DTC144EK	CHIP DIGITAL TRANSISTOR			OR	PU59456-102	CHIP VR
		Q3	2SC2412K	CHIP TRANSISTOR			R14	PU59237-473	CHIP VR, AFC
			OR 2SD601	CHIP TRANSISTOR			OR	PU59456-473	CHIP VR
		Q4	2SC2412K	CHIP TRANSISTOR			R15	PU59237-102	CHIP VR, PB COLOUR LEVEL
			OR 2SD601	CHIP TRANSISTOR			OR	PU59456-102	CHIP VR
		Q5	DTC144EK	CHIP DIGITAL TRANSISTOR			R16	QRSA08J-222YN	CHIP R
		Q6	DTC144EK	CHIP DIGITAL TRANSISTOR			R17	QRSA08J-821YN	CHIP R
		Q7	DTC144EK	CHIP DIGITAL TRANSISTOR			R18	QRSA08J-103YN	CHIP R
		Q8	DTC144EK	CHIP DIGITAL TRANSISTOR			R19	QRSA08J-682YN	CHIP R
		Q9	2SC2412K	CHIP TRANSISTOR			R20	QRSA08J-680YN	CHIP R
			OR 2SD601	CHIP TRANSISTOR			R21	QRSA08J-473YN	CHIP R
		Q10	2SC2412K	CHIP TRANSISTOR			R22	QRSA08J-152YN	CHIP R
			OR 2SD601	CHIP TRANSISTOR			R23	QRSA08J-562YN	CHIP R
		Q11	DTC114YK	CHIP DIGITAL TRANSISTOR			R24	QRSA08J-332YN	CHIP R
		Q12	-	-			R25	QRSA08J-821YN	CHIP R
		Q13	-	-			R26	QRSA08J-562YN	CHIP R
		Q14	2SC2412K	CHIP TRANSISTOR			R27	QRSA08J-332YN	CHIP R
			OR 2SD601	CHIP TRANSISTOR			R28	QRSA08J-393YN	CHIP R
							R29	QRSA08J-562YN	CHIP R
							R30	QRSA08J-102YN	CHIP R
		D1	-	-			R31	QRSA08J-223YN	CHIP R
		D2	DAN202K	CHIP DIODE			R32	QRSA08J-332YN	CHIP R
			OR MA151WK	CHIP DIODE			R33	QRSA08J-681YN	CHIP R
		D3	DAN202K	CHIP DIODE			R34	-	-
			OR MA151WK	CHIP DIODE			R35	QRSA08J-822YN	CHIP R
		D4	DAN202K	CHIP DIODE			R36	QRSA08J-102YN	CHIP R
			OR MA151WK	CHIP DIODE			R37	QRD161J-561	CR
		D5	DAN202K	CHIP DIODE			R38	QRSA08J-471YN	CHIP R
			OR MA151WK	CHIP DIODE			R39	QRSA08J-471YN	CHIP R
		D6	DAN202K	CHIP DIODE			R40	QRSA08J-153YN	CHIP R
			OR MA151WK	CHIP DIODE			R41	QRSA08J-562YN	CHIP R
		D7	DAN202K	CHIP DIODE			R42	QRSA08J-182YN	CHIP R
			OR MA151WK	CHIP DIODE			R43	QRSA08J-222YN	CHIP R
							R44	QRSA08J-332YN	CHIP R
							R45	QRSA08J-332YN	CHIP R
							R46	QRSA08J-103YN	CHIP R
							R47	QRSA08J-103YN	CHIP R
		R1	PU59237-102	CHIP VR, REC FM LEVEL			R48	QRSA08J-333YN	CHIP R
			OR PU59456-102	CHIP VR			R49	QRSA08J-473YN	CHIP R
		R2	PU59237-473	CHIP VR, WHITE CLIP			R50	QRSA08J-222YN	CHIP R
			OR PU59456-473	CHIP VR			R51	QRSA08J-393YN	CHIP R
		R3	PU59237-473	CHIP VR, DARK CLIP			R52	QRSA08J-393YN	CHIP R
			OR PU59456-473	CHIP VR			R53	-	-
		R4	PU59237-153	CHIP VR, CARRIER			R54	QRSA08J-122YN	CHIP R
			OR PU59456-153	CHIP VR			R55	QRSA08J-122YN	CHIP R
		R5	PU59237-103	CHIP VR, DEVIATION			R56	QRSA08J-152YN	CHIP R
			OR PU59456-103	CHIP VR			R57	QRSA08J-OR0Y	CHIP R
		R6	PU59237-222	CHIP VR, NOISE CANCEL			R58	QRSA08J-102YN	CHIP R
			OR PU59456-222	CHIP VR			R59	QRSA08J-331YN	CHIP R
		R7	PU59237-473	CHIP VR, Y LEVEL			R60	QRSA08J-102YN	CHIP R
			OR PU59456-473	CHIP VR			R61	QRSA08J-222YN	CHIP R
		R8	PU59237-473	CHIP VR, REC GAIN			R62	QRSA08J-103YN	CHIP R
			OR PU59456-473	CHIP VR			R63	QRSA08J-152YN	CHIP R
		R9	PU59237-102	CHIP VR, EE Y LEVEL			R64	QRSA08J-103YN	CHIP R
			OR PU59456-102	CHIP VR			R66	QRSA08J-332YN	CHIP R
		R10	PU59237-222	CHIP VR, VIDEO EQ			R67	QRSA08J-103YN	CHIP R
			OR PU59456-222	CHIP VR					
		R11	PU59237-102	CHIP VR, EE BURST LEVEL					
			OR PU59456-102	CHIP VR					

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
R68	QRSA08J-103YN	CHIP R		C25	QCYA1HK-103	CHIP CAP	
R69	QRSA08J-471YN	CHIP R		C26	QCYA1HK-103	CHIP CAP	
R70	QRSA08J-153YN	CHIP R		C27	QCYA1HK-103	CHIP CAP	
R71	—	—		C28	QCSA1HJ-390	CHIP CAP	
R72	QRSA08J-682YN	CHIP R		C29	QCYA1HK-103	CHIP CAP	
R73	QRSA08J-0R0Y	CHIP R		C30	QCSA1HJ-120	CHIP CAP	
R74	QRSA08J-0R0Y	CHIP R		C31	QCYA1HK-103	CHIP CAP	
R75	QRSA08J-0R0Y	CHIP R		C32	QCYA1HK-103	CHIP CAP	
R76	—	—		C33	QCYA1EK-223	CHIP CAP	
R77	QRSA08J-0R0Y	CHIP R		C34	QCYA1HK-103	CHIP CAP	
R78	QRSA08J-0R0Y	CHIP R		C35	ECEV0JV220	CHIP E CAP	
R79	QRSA08J-0R0Y	CHIP R		C36	QCYA1HK-103	CHIP CAP	
R80	—	—		C37	QCYA1EK-223	CHIP CAP	
R81	QRSA08J-153YN	CHIP R		C38	QCYA1HK-103	CHIP CAP	
R82	QRSA08J-122YN	CHIP R		C39	ECEV1CV100	CHIP E CAP	
R83	—	—		C40	QEF80JM-475	CHIP T CAP	
R84	QRSA08J-122YN	CHIP R		C41	QER41CM-106	E CAP	
R85	QRSA08J-393YN	CHIP R		C42	ECEV1CV100	CHIP E CAP	
R86	QRSA08J-102YN	CHIP R		C43	QCYA1HK-103	CHIP CAP	
R87	QRSA08J-102YN	CHIP R		C44	ECEV1CV100	CHIP E CAP	
R88	QRSA08J-0R0Y	CHIP R		C45	ECEV0JV220	CHIP E CAP	
R89	QRSA08J-271YN	CHIP R		C46	QCYA1HK-103	CHIP CAP	
R90	QRSA08J-271YN	CHIP R		C47	QCYA1HK-103	CHIP CAP	
R91	QRSA08J-0R0Y	CHIP R		C48	ECEV1CV100	CHIP E CAP	
R92	QRSA08J-0R0Y	CHIP R		C49	QEF81AM-105	CHIP T CAP	
R93	QRSA08J-223YN	CHIP R		C50	—	—	
R99	QRD167J-155	CR		C51	ECEV1CV100	CHIP E CAP	
R104	QRSA08J-0R0Y	CHIP R		C52	QCSA1HJ-560	CHIP CAP	
R124	QRD161J-271	CR		C53	QCSA1HJ-680	CHIP CAP	
C1	ECEV1HV3R3	CHIP E CAP		C54	QCYA1HK-103	CHIP CAP	
C2	QCYA1HK-103	CHIP CAP		C55	QCYA1HK-103	CHIP CAP	
C3	QCYA1HK-103	CHIP CAP		C56	QCYA1HK-103	CHIP CAP	
C4	QCSA1HJ-151	CHIP CAP		C57	QCSA1HJ-330	CHIP CAP	
C5	QCYA1HK-103	CHIP CAP		C58	QCYA1HK-103	CHIP CAP	
C6	QCSA1HJ-5R0	CHIP CAP		C59	PU56274B-200	CHIP TR CAP, AFC	
C7	QCTA1CH-390	CHIP CAP		C60	QCYA1HK-103	CHIP CAP	
C8	QEF80JM-476	CHIP T CAP		C61	QCYA1HK-103	CHIP CAP	
C9	QCSA1HJ-181	CHIP CAP		C62	QCYA1HK-103	CHIP CAP	
C10	QEF80JM-225	CHIP T CAP		C63	ECEV0JV220	CHIP E CAP	
C11	QCYA1EK-223	CHIP CAP		C64	QEF81AM-105	CHIP T CAP	
C12	QCSA1HJ-391	CHIP CAP		C65	—	—	
C13	QCSA1HJ-471	CHIP CAP		C66	QEF81AM-105	CHIP T CAP	
C14	QCSA1HJ-151	CHIP CAP		C67	—	—	
C15	QCYA1HK-103	CHIP CAP		C68	QCYA1HK-103	CHIP CAP	
C16	QCYA1HK-222	CHIP CAP		C71	QER41EM-475	E CAP	
C17	QEF80JM-225	CHIP T CAP		C77	QCS11HJ-270	C CAP	
C18	QEF80JM-475	CHIP T CAP		C83	QCS11HJ-560	C CAP	
C19	ECEV0JV220	CHIP E CAP					
C20	QEF81AM-335	CHIP T CAP					
C21	QCSA1HJ-680	CHIP CAP					
C22	QEF81AM-105	CHIP T CAP					
C23	QCYA1HK-103	CHIP CAP					
C24	QCSA1HJ-270	CHIP CAP					

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#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
			NOISE MIX BOARD ASS'Y
Q20		DTC144EK	CHIP DIGITAL TRANSISTOR
D15		DA204K	CHIP DIODE
R120		QRSA08J-682YN	CHIP R
R121		QRSA08J-222YN	CHIP R
R123		QRSA08J-472YN	CHIP R
R124		QRSA08J-124YN	CHIP R
C80		QCYA1EK-223	CHIP CAP
C81		QCSA1HJ-820	CHIP CAP
C82		QCYA1EK-223	CHIP CAP
.....			
	TME043A		PREAMP IC [04], EG
	TME043B		PREAMP IC [04], EK

.....			
		PU22428B-03-C	SKEW JUMP BOARD ASS'Y [12]
IC1		AN3592S	FLAT IC
IC2		MSM6989MS	FLAT IC
IC3		TA7374P	INTEGRATED CIRCUIT
IC4		AN8009	INTEGRATED CIRCUIT
Q1		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
Q2		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
Q3		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
Q4		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
Q5		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
Q6		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
Q7		2SA1037K	CHIP TRANSISTOR
	OR	2SB709	CHIP TRANSISTOR
Q8		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
Q9		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
Q10		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
Q11		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
Q12		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
Q13		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
Q14		2SC2412K	CHIP TRANSISTOR
	OR	2SD601	CHIP TRANSISTOR
R1		QRSA08J-332YN	CHIP R
R2		QRSA08J-391YN	CHIP R
R3		QRSA08J-123YN	CHIP R
R4		QRSA08J-104YN	CHIP R
R5		QRSA08J-102YN	CHIP R
R6		QRSA08J-473YN	CHIP R
R7		QRSA08J-821YN	CHIP R
R8		QRSA08J-272YN	CHIP R
R9		QRSA08J-222YN	CHIP R
R10		PU59237-222	CHIP VR, INVERTED COL LEV
	OR	PU59456-222	CHIP VR
R11		QRD161J-223	CR
R12		QRSA08J-103YN	CHIP R
R13		QRSA08J-154YN	CHIP R
R14		QRSA08J-221YN	CHIP R
R15		QRSA08J-393YN	CHIP R
R16		PU59237-473	CHIP VR, 0.5H DET
	OR	PU59456-473	CHIP VR
R17		QRSA08J-222YN	CHIP R
R18		QRSA08J-561YN	CHIP R
R19		QRSA08J-561YN	CHIP R
R20		QRSA08J-393YN	CHIP R
R21		QRSA08J-223YN	CHIP R
R22		QRSA08J-471YN	CHIP R
R23		QRSA08J-222YN	CHIP R
R24		QRSA08J-681YN	CHIP R
R25		QRSA08J-681YN	CHIP R
R26		QRSA08J-471YN	CHIP R
R27		QRSA08J-561YN	CHIP R
R28		QRSA08J-681YN	CHIP R
R29		QRSA08J-153YN	CHIP R
R30		QRSA08J-223YN	CHIP R
R31		QRSA08J-122YN	CHIP R
R32		QRSA08J-102YN	CHIP R
R33		QRSA08J-152YN	CHIP R
R34		PU59237-103	CHIP VR, DELAYED V LEV
	OR	PU59456-103	CHIP VR
R35		QRSA08J-393YN	CHIP R
R36		QRSA08J-473YN	CHIP R
R37		QRSA08J-222YN	CHIP R
R38		QRSA08J-103YN	CHIP R
R39		QRSA08J-223YN	CHIP R
R40		QRSA08J-103YN	CHIP R
R41		QRSA08J-681YN	CHIP R
R42		QRSA08J-681YN	CHIP R
R43		QRSA08J-681YN	CHIP R
R44		QRSA08J-391YN	CHIP R
R45		QRSA08J-562YN	CHIP R
R46		QRSA08J-473YN	CHIP R
R47		QRSA08J-473YN	CHIP R
R48		QRSA08J-333YN	CHIP R

#	REF. NO.	PART NO.	PART NAME, DESCRIPTION	#	REF. NO.	PART NO.	PART NAME, DESCRIPTION
R49	QSA08J-333YN	CHIP R		C42	QCYA1HK-103	CHIP CAP	
R50	QSA08J-122YN	CHIP R		C43	QCSA1HJ-100	CHIP CAP	
R51	QSA08J-471YN	CHIP R		C44	QCYA1HK-103	CHIP CAP	
R52	QSA08J-152YN	CHIP R		C45	—	—	
R53	QSA08J-333YN	CHIP R		C46	QEF81AM-105	CHIP T CAP	
R54	QSA08J-333YN	CHIP R		C47	QCYA1EK-223	CHIP CAP	
R55	QSA08J-122YN	CHIP R		C48	QCYA1EK-223	CHIP CAP	
R56	QSA08J-272YN	CHIP R		C49	QEF81AM-105	CHIP T CAP	
R57	QSA08J-222YN	CHIP R		C50	QCYA1HK-103	CHIP CAP	
R58	QSA08J-0R0Y	CHIP R		C51	QEF81VM-224	CHIP T CAP	
R59	QSA08J-0R0Y	CHIP R		C52	QEF81CM-106	CHIP T CAP	
R60	QSA08J-0R0Y	CHIP R		C53	QCYA1HK-103	CHIP CAP	
R61	QSA08J-0R0Y	CHIP R		L1	PU59482-2	LC BLOCK	
R62	QRD161J-471	CR		L2	PU58627-330J	CHIP COIL	
C1	QCYA1HK-332	CHIP CAP		OR	PU58201-330J	CHIP COIL	
C2	QCYA1HK-152	CHIP CAP		L3	PU59483	LC BLOCK	
C3	QEF81AM-475	CHIP T CAP		L4	PU58627-100J	CHIP COIL	
C4	QEF81AM-105	CHIP T CAP		OR	PU58201-100J	CHIP COIL	
C5	QEF81AM-105	CHIP T CAP		L5	PU59888-470J	CHIP COIL	
C6	QCYA1HK-102	CHIP CAP		L6	PU59888-470J	CHIP COIL	
C7	QCSA1HJ-220	CHIP CAP		L7	PU58627-390J	CHIP COIL	
C8	QCYA1HK-103	CHIP CAP		OR	PU58201-390J	CHIP COIL	
C9	QCSA1HJ-220	CHIP CAP		L8	PU58627-560J	CHIP COIL	
C10	QCYA1HK-103	CHIP CAP		OR	PU58201-560J	CHIP COIL	
C11	QCYA1HK-103	CHIP CAP		L9	—	—	
C12	QCYA1HK-103	CHIP CAP		L10	PU59888-470J	CHIP COIL	
C13	QCYA1EK-223	CHIP CAP		TP	PU56278	TEST PIN, TP1 — 11	
C14	QEF80JM-476	CHIP T CAP		FW1	PU59865-12	FLAT WIRE	
C15	QCYA1HK-222	CHIP CAP		SLD1	PU59947-2	SHIELD PLATE	
C16	QCYA1HK-103	CHIP CAP					
C17	QCYA1HK-222	CHIP CAP					
C18	QEF81AM-105	CHIP T CAP					
C19	QCYA1EK-223	CHIP CAP					
C20	QCYA1HK-103	CHIP CAP					
C21	QCSA1HJ-151	CHIP CAP					
C22	QEK41AM-107	E CAP					
C23	—	—					
C24	QCSA1HJ-220	CHIP CAP					
C25	QEF80JM-476	CHIP T CAP					
C26	QCSA1HJ-270	CHIP CAP					
C27	QCSA1HJ-330	CHIP CAP					
C28	QEF81AM-106	CHIP T CAP					
C29	—	—					
C30	QCYA1HK-103	CHIP CAP					
C31	QCYA1HK-103	CHIP CAP					
C32	QER40JM-476	E CAP					
C33	QCC11HP-223	C CAP					
C34	QCYA1HK-103	CHIP CAP					
C35	QCYA1HK-103	CHIP CAP					
C36	QEF81VM-104	CHIP T CAP					
C37	QEF81AM-475	CHIP T CAP					
C38	QCYA1HK-103	CHIP CAP					
C39	QCSA1HJ-390	CHIP CAP					
C40	QCYA1HK-102	CHIP CAP					
C41	QEF80JM-475	CHIP T CAP					

E. & O. E. No. 8458B

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— Waveform of audio circuit —

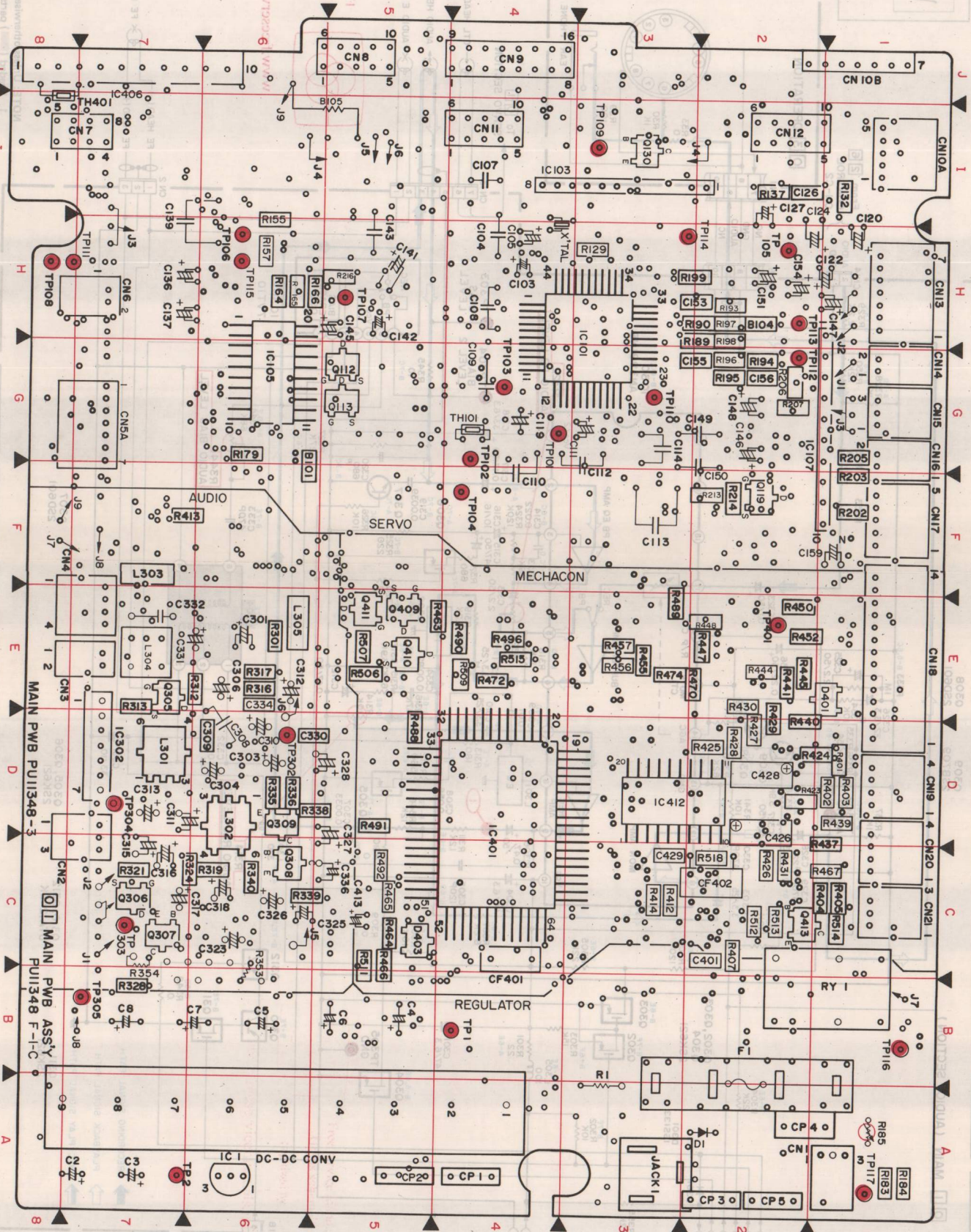


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1. Shaded () parts are critical for safety. Replace only with specified part numbers.

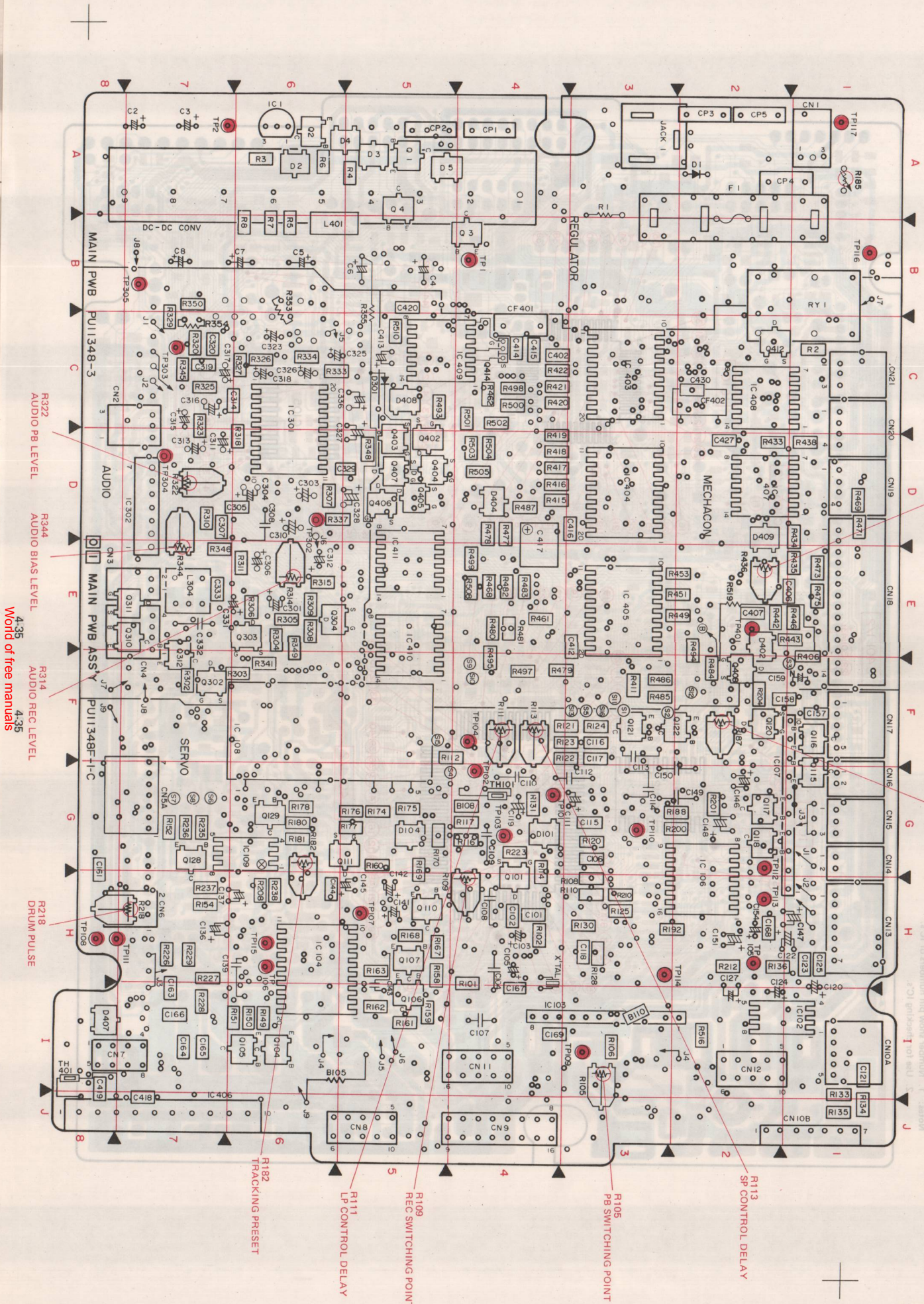
— Front side —



R436
 BATTERY ALARM

11/11/2012
 — Rear side —

R187
 CAPSTAN SAMPLING POSITION



R113
 SP CONTROL DELAY

R105
 PB SWITCHING POINT

R109
 REC SWITCHING POINT

R111
 LP CONTROL DELAY

R182
 TRACKING PRESET

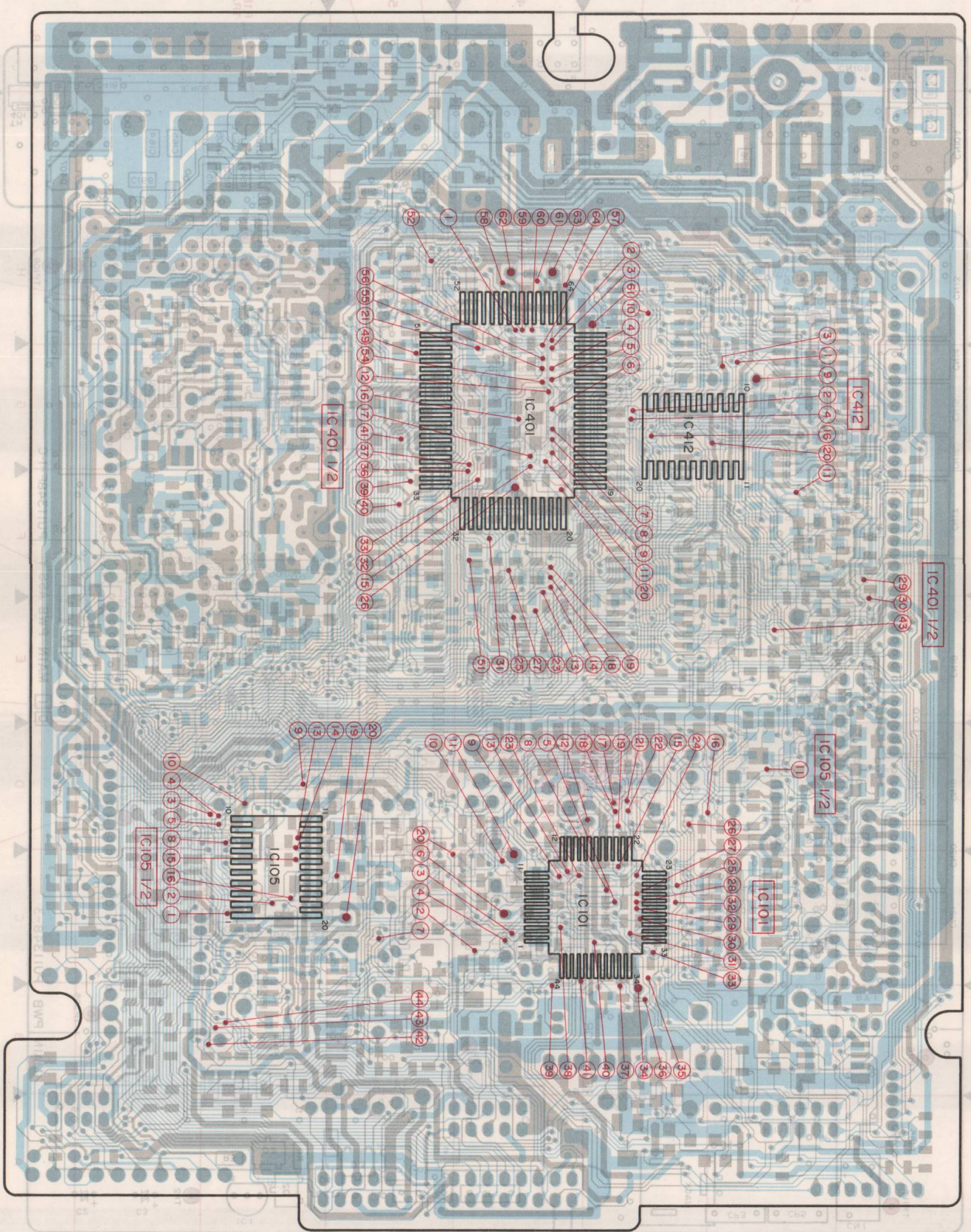
R322
 AUDIO PB LEVEL

R344
 AUDIO BIAS LEVEL

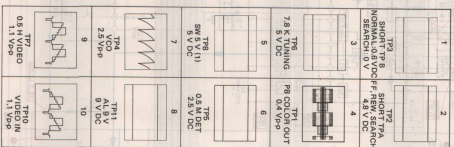
R314
 AUDIO REC LEVEL

R218
 DRUM PULSE

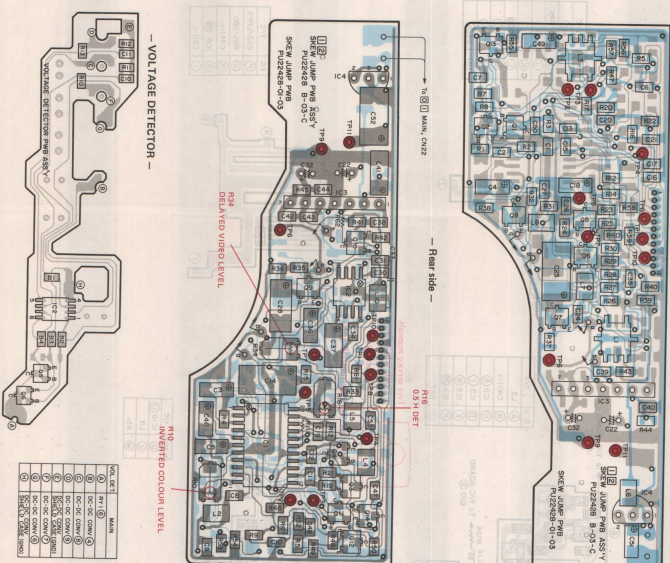
- Notes:
1. Number show pin numbers of IC's.
 2. Use for checking IC's.

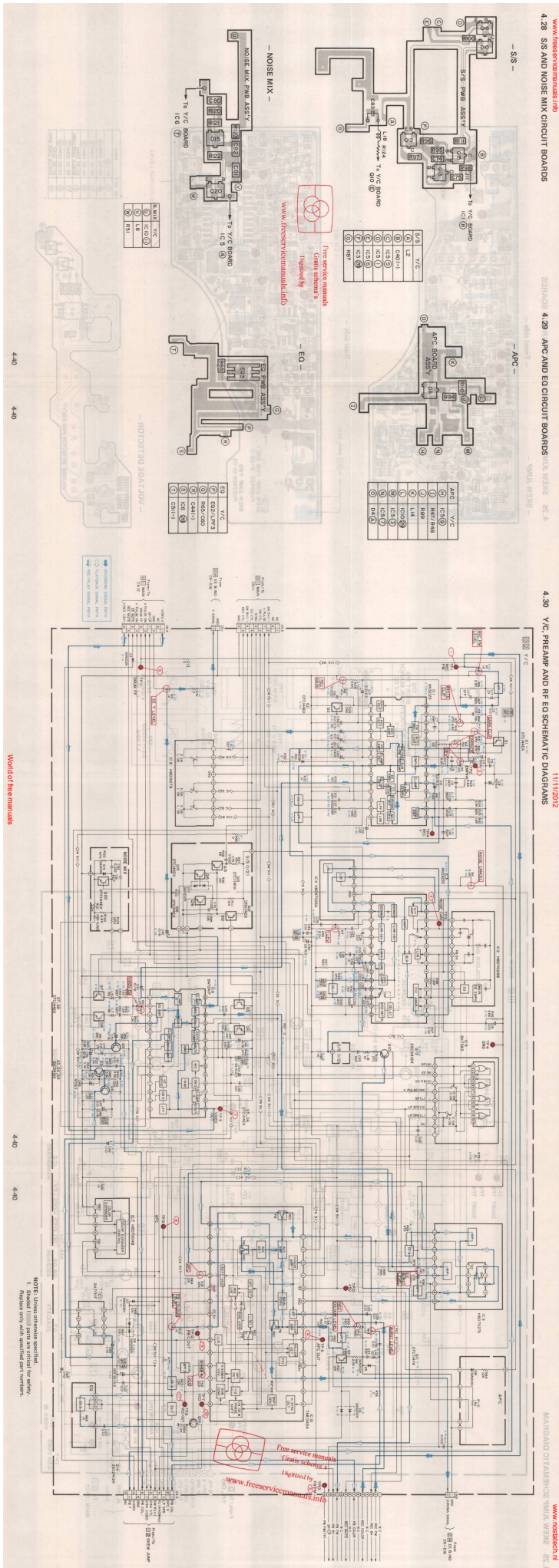


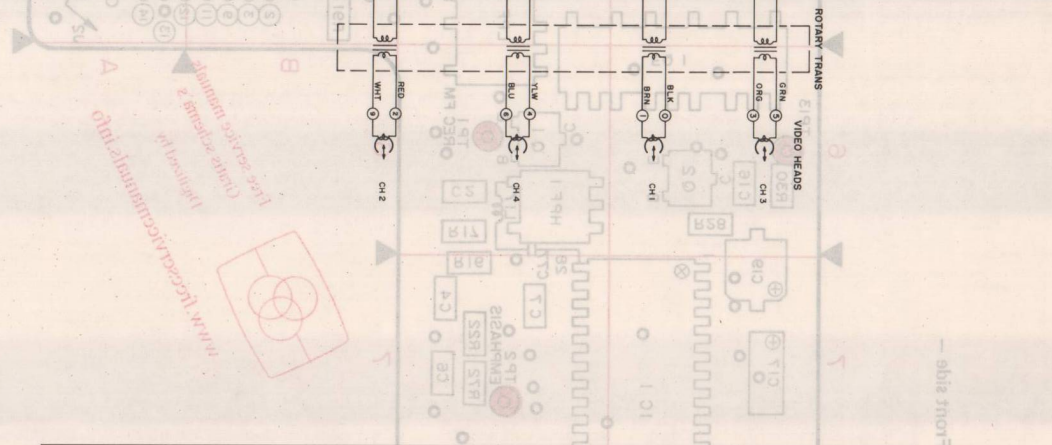
4.26 SKEW JUMP AND VOLTAGE DETECTOR CIRCUIT BOARDS














4.26 SKEW JUMP AND VOLTAGE DETECTOR CIRCUIT BOARDS



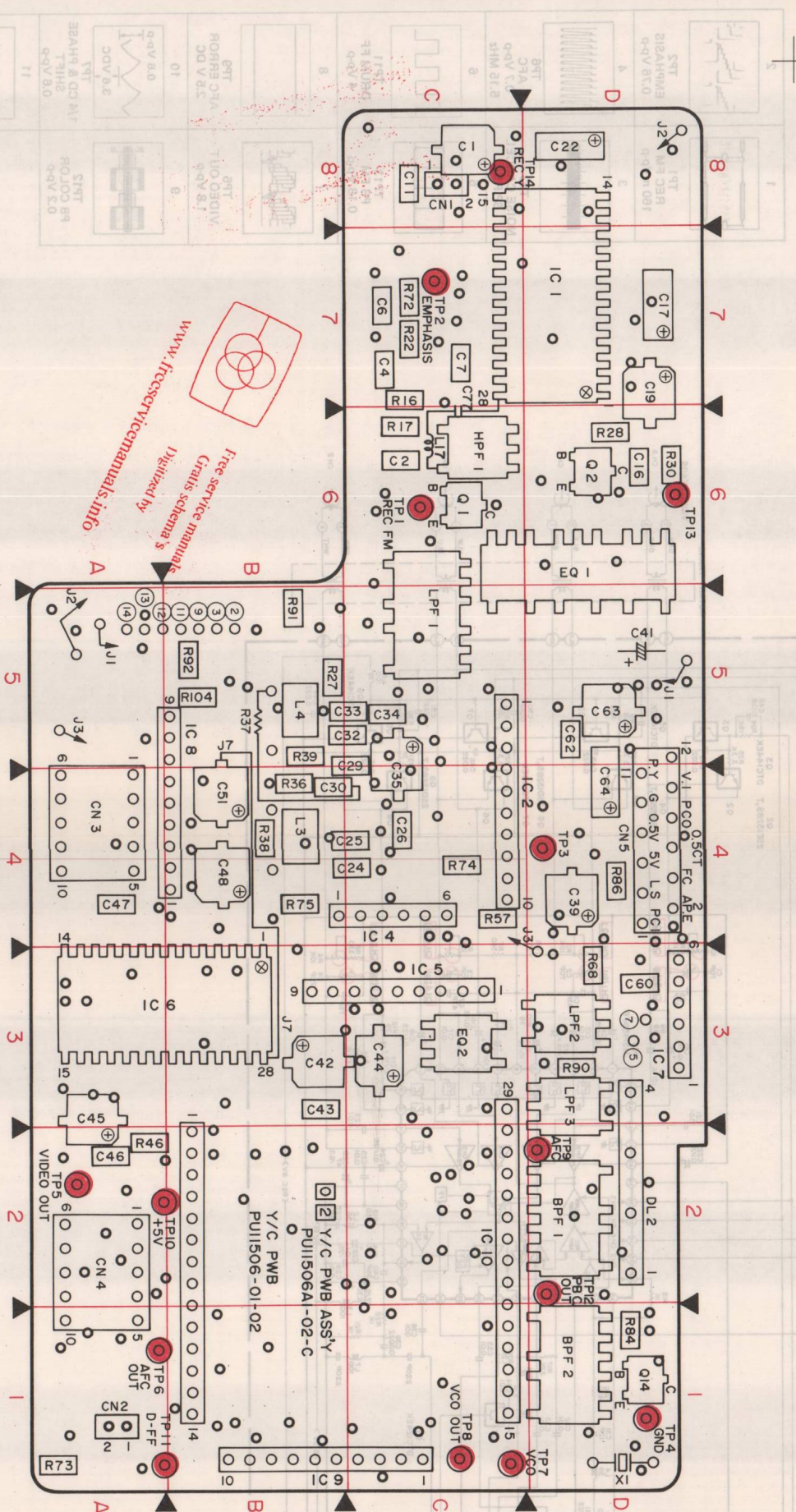




— Waveforms of Y/C circuit —

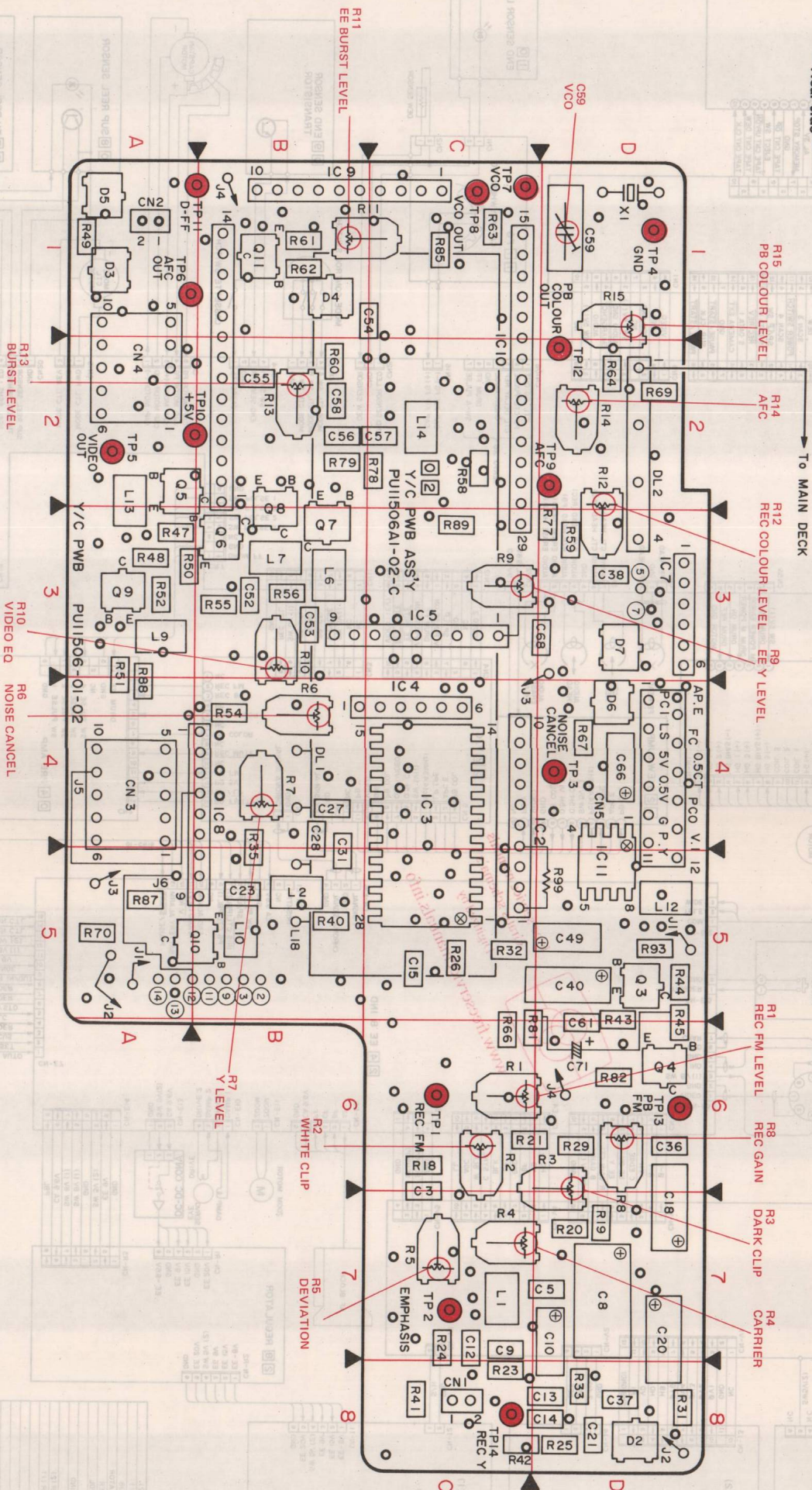
1	 <p>TP1 REC FM 160 mV/p-p</p>	2	 <p>TP2 EMPHASIS 0.76 V/p-p</p>
3	 <p>TP3 NOISE CANCEL SP REC</p>	4	 <p>TP6 AFC 0.7 V/p-p 5.15 MHz</p>
5	 <p>TP13 PB FM 0.18 V/p-p</p>	6	 <p>TP11 DRUM FF 4 V/p-p</p>
7	 <p>TP5 VIDEO OUT 1.8 V/p-p</p>	8	 <p>TP9 AFC ERROR 2.5 V DC</p>
9	 <p>TP12 PB COLOR 0.2 V/p-p</p>	10	 <p>TP7 1/4 CD & PHASE SHIFT 0.6 V/p-p</p>
		11	 <p>TP8 VCO OUT 0.9 V/p-p</p>

— Junction 2/V to 2molexW —
— Front side —

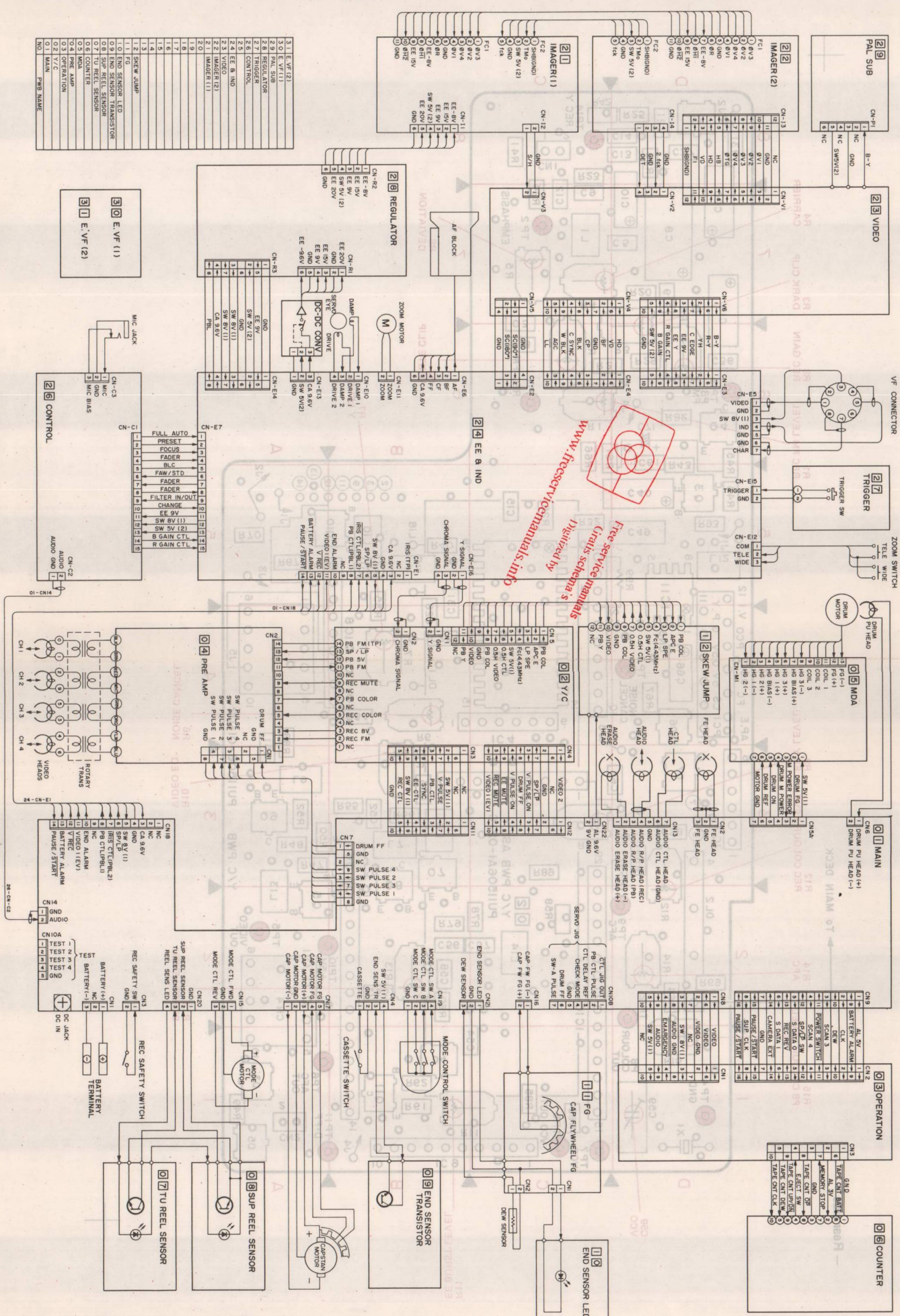


Free service manuals
Circuit's schematics
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— Rear side —



4.15 OVERALL WIRING



JVC

VICTOR COMPANY OF JAPAN, LIMITED.



Free service manuals
Gratis schema's

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